

By the Same Author

THE ECONOMICS OF ROAD TRANSPORT
TRANSPORT CO-ORDINATION
TRANSPORT AND COMMUNICATIONS
RAILWAY ECONOMICS

MANAGEMENT AND LABOUR

by

K. G. FENELON, M.A., PH.D.

*Director, Department of Industrial Administration,
College of Technology, Manchester, and Lecturer on
Industrial Administration, Manchester University*



METHUEN & CO. LTD. LONDON
36 Essex Street, Strand, W.C. 2

First published in 1939

PRINTED IN GREAT BRITAIN

In Memoriam

MARY AGNES FENELOW

Obiit

7 Nov. 1934

PREFACE

THERE has been a remarkable change in the relations between management and labour since the beginning of the present century, and it is now recognized that attention to the human factor is at least as important as mechanical and technical efficiency in the success of a business enterprise.

This book, which has developed in large part out of lectures delivered by the author at the Manchester College of Technology, has been written in the hope that a survey of present-day personnel problems and practice might prove useful to students of industrial management and to those engaged in the day-to-day administration of industrial enterprises.

The author's indebtedness to the standard works on the subjects covered is considerable, and where possible he has endeavoured to acknowledge his sources in the footnotes. The sources, however, are so numerous that he cannot hope to have included all, and he would take this opportunity of expressing his obligations to others. In particular he is under a special obligation to the managers and officials of those firms—too numerous to mention individually—who have freely and generously given him the benefit of their practical experience, or have provided special facilities to study their organizations, methods and policies.

Though the author alone is responsible for the opinions expressed, and for any errors there may be, he gratefully acknowledges his indebtedness to Dr. R. E. Lane for

MANAGEMENT AND LABOUR

many improvements in the chapter on Industrial Diseases; to Mr. E. H. Anderton for his help in connexion with the chapter on State Regulation of Wages; and to his colleagues Dr. D. J. Garden, Mr. M. L. Yates and Mr. D. Cardwell, for valuable suggestions for the improvement of certain sections. He would record also his best thanks to the College Librarian—Mr. A. Hutt—for his unfailing courtesy and ready help. For reading the proofs, the author's thanks are due to his father, Dr. Garden and Mr. Yates.

K.G.F.

College of Technology,
Manchester.

CONTENTS

CHAPTER	PAGE
I. THE DEVELOPMENT OF SYSTEMATIC METHODS OF MANAGEMENT	I
II. THE ORGANIZATION OF A BUSINESS	29
✓ III. INDUSTRIAL RELATIONS AND LABOUR MANAGE- MENT	40
IV. ABSENTEEISM AND LABOUR TURNOVER	69
✓ V. WORKING CONDITIONS AND FACTORY ENVIRON- MENT	85
✓ VI. INDUSTRIAL WELFARE	111
✓ VII. INDUSTRIAL DISEASES	142
✓ VIII. INDUSTRIAL ACCIDENTS	154
IX. ORGANIZATION OF LABOUR	172
X. WAGE SYSTEMS	189
XI. REGULATION OF WAGES BY THE STATE	207
✓ XII. DEVELOPMENT OF ARBITRATION AND CON- CILIATION	216
XIII. METHODS OF PROMOTING ECONOMIC SECURITY FOR EMPLOYEES	227
XIV. METHODS OF SECURING CONTACTS BETWEEN MANAGEMENT AND LABOUR IN LARGE FIRMS	254
INDEX	271

CHAPTER I

THE DEVELOPMENT OF SYSTEMATIC METHODS OF MANAGEMENT

In the present century the increasing complexities of industry have led to greater attention being paid to problems of management, though the beginnings of the movement can be traced back to the last century. Indeed, according to Mr. E. Roll, the firm of Boulton & Watt introduced statistical methods and cost accounting in their Soho factory at the end of the eighteenth century, but it was a Cambridge professor of mathematics, Charles Babbage, who wrote the first systematic treatise on management for the machine age. This work, titled *On the Economy of Machinery and Manufactures*, appeared in 1832 and contained much valuable material relating to management problems, being based on his observations when visiting numerous factories in England and the Continent in connexion with the construction of a calculating machine, which he had invented. He was led thereby, as he states himself in the preface, to study management and to apply 'those principles of generalization which my pursuits had naturally given rise'. Babbage's pioneer work was not developed as might be expected, though a few other works were published dealing with management, such as the *Philosophy of Manufacture*, by Dr. Alexander Ure (1835), described in the subtitle as 'an Exposition of the Scientific, Moral and Commercial Economy of the Factory System of Great

Britain', and *Railway Economy*, by Dr. Lardner (1850). After about the middle of the nineteenth century, considerable developments took place in the technique of cost accounting and in this way a powerful tool was forged by improving methods of managerial control.

The rise of systematic studies of management in the United States took place about 1880, when certain American engineers, such as W. H. Thorne, Oberlin Smith or H. R. Towne, engaged in the supervision of factory production, began to consider management as a subject which could be studied in a systematic manner. The outstanding personality in the new study of management was F. W. Taylor¹ whose *Principles of Scientific Management* and *Shop Management* laid the foundations of the Scientific Management Movement. Taylor first explained his methods in 1890 at a meeting of the American Society of Mechanical Engineers, but it was not till 1910 that his ideas came into prominence among the general public. Then the railroads were asking for increased rates and witnesses were brought forward to show that by means of Taylor's 'Scientific Management', the railroads could reduce their costs by more than the proposed increase of rates would have brought into the companies. This publicity was overdone, and as Taylor

¹ Born in Germantown of well-to-do parents who intended him to enter Harvard University, but did not matriculate because of eye trouble. After serving an apprenticeship in engineering he entered the Midvale Steel Company in 1878 where he worked as a labourer and machinist, was promoted foreman and eventually became technical adviser, meanwhile qualifying as a mechanical engineer at Stevens Polytechnic. In 1898 he joined the Bethlehem Steel Company and remained there until 1901 when he retired to devote himself to the spreading of his ideas. Taylor also distinguished himself as an inventor; his achievements including the invention of a steam hammer at Midvale and, most outstanding of all, his discoveries concerning high-speed steel at Bethlehem. As illustrative of Taylor's tenacity, capacity for detail, and doggedness, it may be mentioned that in high-speed steel research he conducted no less than 40,000 experiments.

feared it would, damaged as much as helped the movement. All sorts of persons set up as 'efficiency engineers', and many of these had no real appreciation of Taylor's methods, thus bringing discredit to the movement. Disciples of Taylor, such as F. B. Gilbreth, C. G. Barth, H. L. Gantt and H. Emerson, however, did much to make known the essential ideas underlying Taylor's system in America and his methods have since spread throughout the world. To Taylor is due the credit of initiating the systematic study of management, though it is true that some of his ideas have had to be considerably modified as a result of further investigations and experience.

In Europe his work was first taken up by a group of French engineers, notably Charles de Fréminville and H. le Chatelier, the latter having called the attention of French engineers to Taylor's methods in the *Revue de Metallurgie* about 1905. The expression, 'Scientific Management', however, inspired a certain distrust in France and it was in some quarters misunderstood. It 'was supposed to be merely the intensification of a relentless mechanism of repetitive work which yielded an output bearing the marks of indifferent quality, of extreme specialization, of monotony, of speeding up and finally of over-production, with all the evils that they bring in their train. They said it was the end of the search for perfection in workmanship, bringing with it the disappearance of that hall-mark of the artisan which is the distinguishing feature of the French product'.¹

But 'this was to impute to Taylor all the ills resulting from the haphazard development of the very practices which he condemned'.²

C. de Fréminville, *Bulletin of the Taylor Society*, Vol. X, No. 1, p. 30.

² *Ibid.*, p. 30.

To avoid the criticisms and controversies which the term 'Scientific Management' had aroused in France, the term 'rational organization of industry' was substituted. During the war the necessity for increased production brought the methods of scientific management into prominence and M. Clemenceau prescribed its adoption in a circular addressed to manufacturers as well as to the military and naval arsenals. An extensive literature grew up about the subject during and just after the war and engineers such as J. Izart, P. Negrer, J. Simonet and F. Joquin were prominent exponents of the new methods.

In France, contemporaneously with Taylor, another pioneer, Henri Fayol, working independently and without knowledge of Taylor's work, was also laying the foundations of the systematic study of management. But whereas Taylor worked from the individual worker upwards, Fayol worked from the managing director downwards and thus his work was essentially complementary to Taylor's. 'More than any other European who has lived in this century, Henri Fayol is responsible for directing minds to the need for studying administration scientifically. He has laid down broad lines which no subsequent student should neglect.'¹

About the same time as Taylor and Fayol were developing their ideas, there was growing up the new science of experimental psychology, and this made rapid progress in its industrial applications between 1910 and 1920, its exponents 'building on the foundation laid by Taylor and concerning themselves with the types of problems in which he was interested'.²

The attitude of the psychologists to Taylor's methods,

¹ L. Urwick, *The Function of Administration*, p. 2. (Institute of Industrial Administration, Papers of Session 1934-35).

² M. S. Viteles, *Industrial Psychology*, p. 18.

however, was partly critical and they emphasized the importance of considering the individual's personality, pointing out that certain so-called 'efficiency methods' might involve a sacrifice of the worker's health, comfort and well-being. Industrial psychology thus supplied a necessary corrective to some of the crudities of the earlier American Scientific Management Movement.

Apart from the pioneering efforts of outstanding individuals, the new methods of management owe much to various organizations and institutions which have been established to promote the study and application of the new technique.

In this connexion there may be mentioned in Great Britain, the Industrial Health Research Board, the National Institute of Industrial Psychology, the Institute of Industrial Administration and the Management Research Groups. Other bodies of a more specialized nature are the Industrial Welfare Society, the Institute of Labour Management, Institute of Cost and Works Accountants, the Works Management Association, Purchasing Officers Association, Office Managers Association and the Institute of Production Engineers.

In several other countries, notably Germany, Czechoslovakia, Italy and the U.S.S.R., national institutions have been established with government support, the best known being the German 'Reichskuratorium für Wirtschaftlichkeit'.

International organizations have also been founded to advance the study of management problems and to raise standards of practice. These include the International Scientific Management Congresses and the former International Management Institute, established in 1927 by the International Labour Office in conjunction with the Twentieth Century Fund and the International

Committee at Geneva to provide a central clearing-house of information relating to applications of scientific management from all over the world.

The Work of F. W. Taylor

In his *Principles of Scientific Management*, Taylor attempted to give a detailed description of his methods, but it suffers somewhat from the fact that he was never able to formulate his theories in writing clearly and succinctly, and he was far from being his own best elucidator. His style unquestionably alienated many at first who later came to appreciate the importance of his essential contributions. He also antagonized organized labour and his somewhat imperious temperament prevented him from winning over labour even in connexion with such matters as the question of a fair day's work.

In the introduction to his *Principles*, Taylor explained that his objects in writing the book were (1) to point out the great loss which results from inefficiency in almost all our daily acts; (2) to show that the remedy for this inefficiency lay in systematic management, and (3) to prove that the best management is a true science resting upon clearly defined laws, rules and principles as a foundation.

He laid down that the principal object of management should be to secure the maximum prosperity for the employer coupled with the maximum prosperity for each employee. By maximum prosperity he explained that he meant not only large dividends for the company or owner, but the development of every branch of the business to its highest state of excellence so that prosperity would be permanent. In like manner, maximum prosperity for each employee would mean not only higher wages than are usually received by men of his class, but

more important still the development of each man so that he might be able to do the highest grade of work for which his natural abilities fitted him, and, further, it meant giving him when possible this class of work to do.

Taylor believed that the true interests of employer and employee are the same; that prosperity for the employer cannot be attained over a long term of years unless it is accompanied by prosperity for the employee and vice versa, and that it is possible to give the workman what he most wants—namely, high wages—and the employer what he wants—namely, a low labour cost for his manufacture.

Taylor held that the main causes of reduced efficiency and low production were:

- (1) The almost universal belief among workmen that increased output per man or per machine would result in throwing a large number of men out of work.
- (2) The defective systems of management which were in common use and which made it necessary for workmen to work slowly in order to protect their own interests.
- (3) The inefficient rule of thumb methods employed in nearly all trades which resulted in the waste of a large part of the effort of the workers.

Taylor's remedy was to substitute what he called 'scientific management' or 'task management'. In the best type of ordinary management which he called the 'management of initiative and incentive', the employer endeavoured to induce each workman to use his best efforts, knowledge, skill and goodwill—in a word his initiative—and in return the employer offered something more than the worker would ordinarily receive, i.e. a special *incentive*. This incentive took various forms, such

as higher wages, premiums, bonuses, shorter hours, or the prospect of promotion.

In 'scientific management' the work of each man is fully planned out by the management at least one day in advance. Written instructions may be provided describing the task to be accomplished and the method of doing the work. An exact time is laid down for each task and if the workman does the job within the limit of the time set, he receives an addition to his wages. The worker, however, is not forced to work at a pace which would be injurious to his health.

The management gathers together all the traditional knowledge which has been the heritage of the workers, and classifies and tabulates this knowledge. A 'best method' of doing the work is evolved and the 'best method' is then taught to scientifically selected workers.

Taylor illustrated his arguments by reference to actual experiments carried out under his supervision. At the Bethlehem Steel Works, he was able to increase the daily tonnage handled per man in loading pig-iron on to railway trucks from twelve and a half long tons to forty-seven long tons. At the same time wages were increased by sixty per cent. The men were trained by Taylor to work at the best pace and to take appropriate rest pauses. He found also that it was essential to select men most suited to this particular kind of work and to draft the less suitable men to other jobs in the works for which they were better fitted.

In another experiment in loading materials, Taylor first selected the best kind of shovel for the purpose. After repeated experiments, this was found to be one holding an average load of the material equivalent to twenty-one pounds. Then thousands of stop-watch observations were made to determine how quickly a

labourer could push his shovel into a pile of materials and draw it out properly loaded. Next a similar accurate series of time studies were made of the time required to swing the shovel backward and throw the load into position. Various studies were made for different combinations of distance and height.

The characteristic features of scientific management as developed by Taylor were:

- (1) The determination of standard times for performing given pieces of work, the elimination of useless motions which cause unnecessary fatigue and the substitution of a 'best method' built up from detailed investigations. All traditional practices had to be justified and Taylor was able to show from actual experiments in his works that even in simple operations such as shovelling, traditional practices left much to be desired. The initiative was taken from the workers and transferred to the management. 'Efficiency engineers' planned out the work and explained in elaborate detail to the workmen exactly what they had to do, even laying down, for example, the 'rest pauses' which should be taken between various operations.
- (2) The standardization of tools and equipment, the provision of the most suitable tools and appliances for each kind of work, the use of slide rules (such as that invented by C. G. Barth), and similar time-saving appliances and improved methods of store management. Instead of workmen owning the tools they used—incidentally it may be mentioned this is still the almost universal practice in the British building trades—which might be of all sorts, sizes and degrees of repair, the management should establish a tool-room with adequate supplies of tools selected after scientific tests and sharpened, repaired and maintained by the management.

- (3) Arrangement and placing of tools and materials so as to be at hand immediately as required and so as to eliminate unnecessary fatigue and waste of time. An extension of this idea is the moving belt conveyor for assembly operations popularized by Henry Ford, but in use long before his time.
- (4) Improvements in the workers' immediate environment, e.g. as regards lighting, heating and ventilation.
- (5) Vocational selection of workers whereby each would be set to do tasks for which he was best suited.
- (6) Functional or specialized foremanship.
- (7) The establishment of a planning department.
- (8) The 'Exception Principle', whereby routine work is separated from the exceptional. This is essential in a large concern to prevent the management being swamped by detail.
- (9) Cost accounting. This Taylor removed from the general accounting department and placed it in the planning department, though interlocking it with the main books.
- (10) Finally, considerable attention was devoted to systems of wage payment. Some form of piece-work or premium bonus was adopted though the details varied as between the different exponents of scientific management. In general the principle was adopted of fixing a standard time for doing the job, completion in less than the standard time being rewarded by increased remuneration.

Since Taylor's pioneer work, there have been many developments in scientific management, especially as a result of applications of industrial psychology. Experience has shown that certain modifications of Taylor's methods were necessary, especially when the system is adopted in other countries where conditions are very

different. In America unskilled immigrant labour required different treatment from the skilled labour more common in Britain, Germany or France. Thomas Bata—the Czechoslovakian shoe manufacturer—for example, claimed that it was necessary to adopt methods of his own when applying scientific management principles because of the special character of his labour.

In Great Britain scientific management was adopted much more slowly and less extensively than in the U.S.A., despite the fact that Babbage some fifty years previously had 'arrived at a point of view identical with Taylor's underlying philosophy, namely that the process of management could be made the subject of general principles'.¹ Forms of premium bonus payments were adopted in engineering works after 1890, the best known being that introduced by James Rowan in 1898 at the Glasgow works of David Rowan & Sons, while in 1902 the Carlisle National Agreement between the Engineering Employers' Association and the Amalgamated Society of Engineers regulated the application of premium bonus systems.

Probably the earliest attempt to apply Taylor's principles of scientific management in England was made about 1910 in the workshops of Messrs. Hans Renold, Ltd., in Manchester. The agreement of the workers was obtained and various safeguards, including ready access to the management were adopted. Summing up the results of the experiment, Mr. C. G. Renold stated: 'It is noteworthy that a movement which began with attention focused on speeding up individual workers ended with attention focused on management and the means of control, coupled with great attention to the

¹ L. Urwick, *The Development of Scientific Management in Great Britain*.

relationship between management and workers. In our experience these latter developments far outweigh in their contribution to efficiency the original ones. Some of the original schemes of reward payment still operate, but some have been abandoned, though time study and detail instruction about the job are still retained; the attainment of 'schedule time' now seems to follow fairly generally as a result of high day wages; the facilities and services available; the close management control; and satisfactory relationships that obtain throughout the personnel.¹

In Britain, direct interest in Taylor's work on scientific management only became general after 1911 though a large number of factories, especially those in the engineering industries, had adopted premium bonus systems and modernized costing methods. Among progressive firms also there had been reached a high standard of general management, though not specifically based on Taylor's methods. The publication early in 1914 of a book entitled *Engineers' Costs and Economical Workshop Production*, by Mr. (now Professor) Dempster Smith and Mr. P. C. N. Pickworth, was important in making modern methods of management better known among engineering firms.

During the war years a number of interesting experiments were carried out which have been described in detail in certain publications of the Industrial Fatigue Research Board. In report No. 3, for example, an account is given of an experiment made by the Derwent Foundry Company. The managing director in the first place obtained the consent of the workers so as to secure their co-operation and goodwill. Time and motion studies were carried out on selected workers; a stop-

¹ Appendix to L. Urwick, *The Development of Scientific Management in Great Britain*.

watch being used to ascertain the time taken to perform each motion. All the requisite tools and materials were arranged so as to avoid loss of time or waste of energy. From an analysis of the motion studies, a standard way of doing each job was devised and a standard time was allotted to it. Particular attention was paid to training the men in the standard methods and both the duration and type of teaching were varied to suit the different needs of each worker. Trained men were paid at piece-rates but as soon as a man reached sixty per cent of the standard he began to receive a bonus in addition to his wages. Throughout, no compulsion was placed on the workers who were free to revert either individually or collectively to the old system whenever they liked. There was no trouble with the trade union concerned at any time. As a result of the new methods the wages of all employees were greatly increased and according to the men themselves, they felt no extra fatigue. Despite a reduction in the hours of work, there was a very marked increase in output, especially for jobs that included machine work where in some instances the increase was three hundred per cent.

Time and Motion Studies

Of all the methods adopted by scientific management, 'time and motion studies' have attracted the most attention and they have now been very widely adopted, and, developed considerably from the pioneer experiments of Taylor, Gilbreth and others.

In these studies trained experts undertake detailed investigation into the various operations performed by the workers. Each manual operation is analysed into its various elements and the time required for each is recorded.

At first a stop-watch was used to record the observations but later a cinematograph film was taken of the worker and the time was recorded on the film by including a clock with a 'seconds' hand. When the film is run through the projector in slow motion, the details can be studied. Sometimes an ordinary camera is used, and by means of lights attached to the hands, arms, feet or other moving parts of the worker's body, a series of lines are shown by the photograph. But utilizing a stereoscopic camera, motions in all three planes can be studied.

Time and motion study experiments demonstrated that one worker might be slower in carrying out some of the elements than the average worker, but that he might be able to carry out others more rapidly. Almost invariably also it was discovered that workers made a larger or smaller number of unnecessary motions. Some of these apparently useless motions have since been shown to be necessary to link successive motions into a convenient whole, or to secure a rhythmic movement. The earlier and cruder idea of a 'one best method', built up by eliminating all motions but those which were absolutely essential, has thus had to be modified. For example, where an operation requires a movement of the hand in succession to the three points of a triangle, a longer curved movement is easier and less fatiguing than the straight path from point to point.

The 'one best way' has also had to be modified to meet criticism from another direction. Account has to be taken of individual differences of ability, of physique or of temperament. A rigid set method of carrying out a job is impossible in view of the different physiological and psychological characteristics in different workers. For example, in the army a soldier is allowed to

fire his rifle from his left shoulder should it suit him better. In the factory, differences in height or physique, left-handedness or other characteristics must be taken into account.

Increased output gained by rigid application of standard methods may be attained only at a great cost of human energy and happiness, and may become a very severe form of irritation to the worker. An increased output may be comparatively easy to obtain over a short period by means of bonus incentives, a desire to co-operate or fear of dismissal, but it may not be permanent. Further, if pushed too far, the methods of scientific management may deprive workers of initiative and adaptability by too rigidly stereotyping their methods of work. To insist on a uniform output per hour is not in accord with the laws governing fatigue.

The adequate training of workers insisted upon by all the exponents of scientific management was a significant contribution, the importance of which is becoming more and more recognized. Nevertheless much yet remains to be done in this direction and the statement is still in large measure true that 'though in the athletic world, instructors exist to teach boxers how to balance themselves and use their arms, and cricket professionals are constantly at work improving the efficiency of batsmen and bowlers . . . yet in the industrial world, the value of teaching operatives how to earn their livelihood is yet hardly understood'.¹

In the United States, the methods of scientific management aroused a considerable degree of opposition because they were pushed to an extreme. Often workers were forced to work at a pace which they were unable to keep up for any length of time without harmful consequences.

¹ Interim Report, Health of Munition Workers Committee, p. 77.

Further, as was pointed out by a U.S. Government Report on Industrial Relations, those responsible for making efficiency studies in factories were often under-paid, of low grade and without imagination. They had no authority with the management so their recommendations were often over-ridden or altered in such a way as seemed to be financially profitable to the management.

Finally it needs to be emphasized that scientific management was not a movement covering every aspect of management. As E. D. Jones points out: 'It would be a mistake to identify scientific management as equivalent to the entire movement to introduce science and system into management. It by no means created a complete science of administration. Indeed, but one of its founders—Harrington Emerson—was widely familiar with the pure theory of administration. But it has made very important contributions—so important that industrial administration before its advent now seems like ancient history—and it is desirable to have a name by which to designate them'.¹

Henri Fayol

Henri Fayol qualified as a mining engineer in 1860 and entered the important coal and metallurgical firm of Commentry-Fourchambault. Eventually in 1888 he rose to be manager of the firm Commentry-Fourchambault & Decazeville, which he thoroughly reorganized as it was then in a critical condition.

His theories of administration were expounded in two lectures he gave to the Society for the Encouragement of National Industry, and these were published about 1919 under the title of *Administration Industrielle et*

¹ *The Administration of Industrial Enterprises*, p. 288, New Edition.

*Generale.*¹ He analysed the various operations that occur in business into six groups:

- (1) Technical operations (production, manufacture, etc.).
- (2) Commercial operations (purchases, sales and exchanges).
- (3) Financial operations (finding and controlling capital).
- (4) Security operations (protection of goods and persons).
- (5) Accounting operations (stocktaking, balance sheet, costing, statistics, etc.).
- (6) Administrative operations (planning, organization, command, co-ordination and control).

Any undertaking, he pointed out, whether it is simple or complicated, big or small, always contains these six groups of operations. Administration, it will be seen, is only one of these functions, but the managers of big concerns spend so much of their time on it that their jobs seem to consist solely of administration. But administration must not be confused with government. To govern is to conduct an undertaking towards its objective by seeking to make the best possible use of all its resources; it is, in fact, to ensure the smooth working of the six essential functions. Administration he defined as 'to plan, organize, command, co-ordinate and control'.

Fayol's analysis, it will be observed, is a functional analysis. The function of administration he further subdivides into five main aspects and in dealing with planning of operations (*prévoyance*), he summarizes what has subsequently become known as budgetary control. Fayol, however, at the same time, insisted on

¹ An English translation by J. A. Coubrough entitled *Industrial and General Administration* was published by the International Management Institute in 1925.

elasticity in the application of administrative principles, since in practice the same principle is hardly ever applied twice in exactly the same way. He emphasized that planning ahead must be as precise as is possible. 'As a rule it is possible to trace the line of action for the near future with quite a considerable degree of accuracy, while just a general guide is enough for operations which are some distance ahead ; before the time comes when they will have to be carried out, more information will be available, which will allow the line of action to be accurately determined.'

Fayol pointed out that the chief characteristic of the lower employees, whatever the function being considered, is the special ability appertaining to the function, while the chief characteristic of the higher employees is administrative ability. 'Technical ability is the most important quality at the bottom of the industrial ladder and administrative ability at the top.' 'The technical function,' he said, 'has long been given the degree of importance which is its due, and of which we must not deprive it, but the technical function by itself cannot ensure the successful running of a business ; it needs the help of other essential functions and particularly of that of administration.'

Mr. L. Urwick in an evaluation of the work of Henri Fayol has summed up his contribution as follows : 'Indeed the unique character of Fayol's work cannot be over-emphasized. For the first time a successful business leader of long experience submitted not the work of others, but his own duties and responsibilities to close scientific analysis. He viewed what he had to do as an administrator with a detachment as rare as it is valuable. In the first quarter-century of the scientific study of business management, his is the only European figure worthy a

place beside that of F. W. Taylor. To Taylor belongs the glory of the pioneer. He it was who initiated the idea that management and administration might be studied scientifically. But Fayol showed beyond question, what Taylor himself appreciated, but what many of his imitators have failed to emphasize, that better management is not merely a question of improving the output of labour and the planning of subordinate units of organization, it is above all a matter of closer study and more administrative training for men at the top. Seldom in history can two men working in an identical field have differed as sharply in methods and in the details of their careers, and yet have produced work which was so essentially complementary'.¹

Industrial Psychology

In the last fifty years, psychology has been greatly developed on the experimental side, whereas formerly it was purely a speculative or introspective science. Wilhelm Wundt, who in 1879 established in Leipzig the first psychological laboratory, was mainly responsible for giving it an experimental turn. Wundt, however, was not interested in the psychological study of individuals as such but rather attempted to derive generalizations which could be applied to the average person—a 'psychological man' akin to the 'economic man' of the classical economists. Industrial psychology, though it is part of experimental psychology, is based upon a study of individual differences, that is with the reactions of an individual to a specific situation rather than with general tendencies. For example, in the Wundtian psychology, the inability of a single individual to distinguish between green and red would not be of special

¹ *The Function of Administration with special reference to the work of Henri Fayol*, pp. 12-13.

significance since its investigations would be concerned rather with the analysis of the factors underlying colour discrimination. But to the industrial psychologist engaged for instance in problems of the selection of colour matchers, textile workers or locomotive drivers, it would be of great significance.

Since industrial psychology is concerned with a study of individual differences, it owes much to the pioneer work of Sir Francis Galton who was the first to carry out such studies, and who also devised various aptitude tests and introduced statistical methods for their analysis. Its subsequent development was largely due to J. M. Cattell—an American who was at one time an assistant to Wundt—when a professor at the University of Pennsylvania and later at Columbia University. Cattell emphasized the importance of individual differences in accounting for variability in the performance of a job and did much to develop the technique of selection tests. Other pioneers in the development of the new science of industrial psychology were Münsterberg and Kraepelin in Germany, and Binet in France. Hugo Münsterberg was the first to formulate systematically a science of industrial psychology. Though a German psychologist, he acted during the latter years of his life as director of the psychological laboratory at Harvard University, and his work greatly stimulated investigations both in the U.S.A. and Europe. In developing the new subject he related it to Taylor's work on scientific management, and though he died in 1916, the science whose foundations he laid received a great stimulus from the successful use of psychological tests for the selection and classification of army recruits in various countries.

Vocational Selection

The early experiments in the application of psychology to industry in the U.S.A. were almost entirely limited to the development of selection tests, and even since the war the bulk of the work done in that country has been in connexion with vocational selection.

During the war psychological tests were employed on a large scale in the U.S.A., where all recruits, numbering nearly two million men, were tested. In Britain, psychological tests were utilized in the selection of air pilots and observers, submarine 'listeners-in', hydrophone operators and other specialists. In Germany and France, tests were also used to select men for range-finding, the air services and motor-vehicle operation. In various countries, too, similar methods were applied on a large scale to the vocational selection of workers for war-time industries.

Since the war, interest in vocational selection on a psychological basis has continued and vocational tests have been devised and successfully applied to the selection of chocolate makers, clerical workers, typists, shorthand writers, weavers, engineers, packers, solderers, embroiderers, biscuit makers, retail salesmen, telephone operators, transport workers, policemen, shoemakers, acetylene welders, crane operators, printers and many others.

In Germany, over one hundred firms were employing psychological methods of selection by 1926, including Krupp, Zeiss, Siemens-Schuckert, the Greater Berlin Tramways and the State Railways. Germany, indeed, among European countries, has adopted vocational testing to the greatest extent. In the metal trades, particular attention has been devoted to the development of tests for the selection and guidance of apprentices.

The employment exchanges have also adopted vocational selection methods.

In Germany the methods of psychological testing have been carried over to help in the campaign for national fitness, and in that country medical men known as 'sport doctors' have been appointed at the various sport clubs to advise members regarding the types of exercise for which their physique is unsuited, and to see that they do not overstrain in a way likely to be harmful to their health. In Bremen an institute has been established where anyone—young or old—can consult a 'sport doctor' without charge, and use at low cost a gymnasium where his prescriptions can be carried out. There any one, also, can put himself through a very elaborate and thorough series of physical and mental tests with the help of trained laboratory assistants at a cost of about fourpence.

The introduction of successful vocational testing would be advantageous to both workers and employers, since the worker would be given more congenial work and should obtain higher earnings, while the employer would gain from greater output, a reduction in labour turnover, and a more contented staff.

Recent Developments in other Branches of Industrial Psychology

Industrial psychology has been rapidly developed since the war, and the most notable trend has been the increasing interest shown by psychologists in differences between individuals considered as total entities or 'personalities'. The main directions, other than vocational selection, along which most progress has been made are studies in problems of industrial fatigue, methods of doing work, the prevention of accidents and the study of monotony.

Perhaps one of the most important of the contributions

of industrial psychology is the attention which it has drawn to what might seem to be small matters. Attention to these will often relieve workers of strain and thereby greatly increase output. Sometimes factory workers have to stoop to the floor several hundred times a day, or to walk several miles to collect materials from different parts of the factory. Sometimes a lever may be just too short, a foot-pedal just too high, or a bench just too narrow.

In training workers, it is now emphasized that every individual within limits must develop his own 'style', and no attempt is made to standardize rigidly the movements of different workers; this was the mistake made by many of the pioneers of scientific management. Care, however, is taken to see that they learn to make smooth, continuous movements in place of jerky, discontinuous ones; that where force is required as in swinging a blacksmith's hammer or a pick, natural momentum is used; that wherever possible both hands are used and that unproductive movements are eliminated except where they contribute to rhythm.

In Germany, much research has been undertaken in connexion with the training of workers, time studies, motion study, fatigue, monotony and working conditions. Institutes for the industrial application of psychology have been inaugurated in all the larger German cities, including Berlin, Munich, Halle, Dresden, Mannheim, Hamburg and Hanover. Some are attached to universities and technical colleges, while others are supported by the contributions of individual firms.

In Great Britain, the Industrial Health Research Board and the National Institute of Industrial Psychology have been the two main agencies in undertaking investigations and spreading a knowledge of the methods of industrial psychology.

The former owes its origin to the Health of Munition Workers Committee set up in 1915 to undertake investigations which would assist in increasing output, diminishing fatigue and reducing lost time in industry. In 1918, the work of this body was continued by the Industrial Fatigue Research Board under the joint auspices of the Department of Scientific and Industrial Research and the Medical Research Council. Its terms of reference were: 'To consider and investigate the relations of the hours of labour and of other conditions of employment, including methods of work, to the production of fatigue, having regard both to industrial efficiency and to the preservation of health among the workers'. Later it was reconstituted under the supervision of the Medical Research Council, and was renamed, 'The Industrial Health Research Board', with the following terms of reference: 'To suggest problems for investigation and to advise upon, or carry out, schemes of research referred to them from time to time by the Medical Research Council, undertaken to promote better knowledge of the relations of methods and conditions of work, to functions of the human body, having regard to both the preservation of health among the workers and to industrial efficiency, and to take steps to secure the co-operation of industries in making widely known such results of this research work as are capable of useful application to practical needs.' The Board has published numerous studies undertaken for it by skilled investigators on a wide variety of subjects including the effects on output of hours of work, rest pauses and atmospheric conditions, dexterity, industrial accidents, lighting, vocational guidance and selection, time and movement studies, posture, physique, labour turnover, absenteeism and noise. The reports have been characterized by their cautious interpretation

of results, careful experimental control and high standard of quality.

The National Institute of Industrial Psychology was founded in 1921 with Dr. C. S. Myers as principal, to investigate for individual firms problems concerned with the human factor. The aim of these investigations has been to enable workers to reach optimum efficiency, this being attained by improving working conditions or incentives, and thereby increasing output, interest and contentment through the reduction of fatigue, boredom and spoiled work. The institute's investigators also suggest methods of improving factory lay-outs, routing, transport methods and other details of production. The institute advises on personnel problems such as the recruitment, selection, training, promotion and management of staff, while it has a special section for examining and advising young people as to the careers for which their abilities and qualities best fit them.

The institute has undertaken since its inception investigations in several hundred factories representing many different industries, including engineering, retail stores, biscuit manufacture, baking, chocolate manufacture, preserves, fine chemicals, coal-mining, tapestry, catering, paint manufacture, radio manufacture, textiles, gas making and rubber manufacture. Its services have also been employed in connexion with agriculture, gold-mining, banking, insurance and hotels.

The various investigations of the institute, as well as developments in industrial psychology are described in a monthly publication entitled *The Human Factor* (formerly *The Journal of the National Institute of Industrial Psychology*). The investigations described therein have included problems of staff selection, the nature of mechanical ability, daily variations in output, accident prevention, vocational

problems of the blind, packing, assembling, rhythm, labour incentives, factory lighting, ventilation and heating, and market research.

Training for Management

Those responsible for the running of large businesses are nowadays very much concerned with the problem of finding and training men on whom the control of the enterprise and its various sections or departments will devolve in the future. No doubt in the past when the structure and organization of industry were comparatively simple, a man with good technical qualifications could often obtain a sufficient knowledge of management methods as he worked his way up, but to-day this is becoming difficult, if not impossible, because the technique of management is not so easily learnt as formerly, and it may well be, that as a result of specialization, the same opportunities do not exist for a man to obtain an all-round knowledge of the activities of his firm. It is doubtful, therefore, if the older method of learning by experience alone is either efficient or adequate.

Some form of training has to be devised so that adequate opportunities may be given to promising young men to obtain suitable and varied experience. Large firms can often provide special trainee schemes while even in smaller firms likely young men should be given a variation of experience by passing them through a number of departments or by utilizing their services as personal assistants to some executive.

Certain firms favour a system of passing trainees through the various sections or departments according to a definite time-table or plan, others only pass them on to new work when they have qualified themselves by reaching a minimum standard of efficiency. But

whatever the scheme, it is essential that some responsible official should be in close contact with the trainees, receiving periodical reports about them and meeting them personally from time to time.

The training should aim at developing the powers and abilities of the individual, not merely giving him a knowledge of how to carry out routine processes; thus trainees may be given problems to solve on their own, or they may be shown something of the work of management by means of discussions with senior officials. Instruction in the actual work of a business has to be supplemented by some more general training, and in this connexion, academic courses in business management and industrial administration at the universities and technical colleges can claim to fulfil a useful part. They do not, and cannot, claim to be a substitute for experience in specific industries, but they provide a background and a training in the many complicated subjects, such as the principles of economics, accounting, costing, industrial law, business statistics, sales organization, purchasing or finance, which nowadays the potential manager has to master.

Systematic study of this nature gives to the aspirant to management a broad outlook and a grasp of principles, and puts at his disposal the accumulated experience of others. A further aim should be to develop powers of initiative and this can be done if the course is so devised as to include more than attendance at formal lectures. In the department of industrial administration at the Manchester College of Technology, for example, this problem has been tackled by devoting special attention to seminars, discussion classes, 'case method' instruction, personal investigations by the students and study visits to offices and factories.

In this country general training in management and

administration is mainly provided by means of evening classes.

Evening work involves, however, attendance for two or three evenings a week, and this imposes a considerable strain on young persons engaged during the day in industry, and it is not improbable that the individual's attendance may be interrupted by shift-working, overtime or the like.

If possible, it is far preferable to allow promising employees time off during one day a week to attend a day course at some technical institution where facilities of this kind are available.

More ambitious schemes are also in operation at the London School of Economics, the Dundee School of Economics and the Manchester College of Technology, which provide full-time training over a period of one or two years. Some firms grant leave of absence to picked individuals to take these courses so that they may supplement their practical experience with a more general training, while other students come from public or secondary schools, or the universities with the intention of preparing themselves for a business career.

CHAPTER II

THE ORGANIZATION OF A BUSINESS

A CLEARLY thought out and well-planned organization is of fundamental importance to any business enterprise. The essential requirement is that definite tasks and responsibilities should be allocated throughout the official hierarchy from the general manager down to the foremen and charge hands, because it is only in this way that uncertainties and conflicts of responsibilities and of authority can be removed and a smoothly working organization established. The higher officials should be freed from the necessity of attending to routine details so that they can concentrate their attention on major problems or on variations from routine. This involves systematic delegation of authority and responsibility, but in this respect many business organizations fail, especially those which have recently expanded from fairly small beginnings. Responsibility for the execution of the work must always be accompanied by the authority to control and direct the means of doing the work. Some managers while they are very willing to delegate responsibility will not at the same time delegate adequate authority, preferring to keep this as much as possible in their own hands. The result can only be uncertainty, ineffectiveness, petty annoyance, delay and constant irritation.

In an intelligently planned organization, there should exist a direct line of responsibility and co-ordinate delegated authority from the general manager down to the persons ultimately responsible for each act. 'By

various ratios, the administrative personnel will broaden out as it departs from head-quarters. The administrative structure can be likened to a pyramid, each human course broader in numbers than the one above it. It is a hierarchy in which each person is fixed in his place by bonds of duty to superior and subordinate.¹

The Span of Control

In practice the ratios between superior and subordinate vary considerably. In the higher administrative positions where each subordinate implies a separate type of activity or function to be supervised, the ratio should be small, probably one to three or at the most one to five or six. Lower down in the level of organization the number may be eight or twelve, since the responsibility is for the performance of specific tasks rather than the supervision of others. Foremen, on the other hand, may control considerably larger numbers—forty to sixty is not unusual—but these men are all engaged in doing somewhat similar types of work, and generally when the number of workers is large they are assisted by charge hands or leading hands. The number of persons reporting directly to the general manager should be definitely limited. This can be achieved by drawing the strings of control together in the hands of sub-managers or vice-presidents before they reach the general manager. The L.M.S.R., it is of interest to note in this connexion, reduced the number of its vice-presidents to three in 1931. Mr. L. Urwick has emphasized the importance of this principle which he has termed the *Span of Control*.² The number of subordinates whose tasks are interdependent who can be

¹ E. D. Jones, *The Administration of Industrial Enterprises*, p. 151. New Edition.

² See *Organization as a Technical Problem*, also *Bulletin of the International Management Institute*, Vol. III, No. 3, March, 1933, Article on 'Relationships in Management'.

directed immediately and effectively by one individual is strictly limited, however able that individual may be. It should not exceed five or six; the higher the quality and the larger the responsibilities of the subordinates, the smaller should be the number.¹ Devolution of authority, therefore, is a problem of special importance in a large organization.

"The psychological conception of "the span of attention" places strict limits on the number of separate factors which the human mind can grasp simultaneously. It has its administrative counterpart in what may be described as "the span of control". A supervisor with five subordinates reporting directly to him, who adds a sixth, increases his available human resources by twenty per cent. But he adds approximately one hundred per cent to the complexity and difficulty of his task of co-ordination. The number of relationships which he must consider increase not by arithmetical but by geometrical progression."²

Mr. Urwick has advocated as a solution of the problem the use of 'staff' in industry who would assist their chief in the same way as do the staff officers in the army. Such staff assistants, if their services are properly utilized, can relieve their chief of much of the minor responsibilities of administration, thus allowing him to concentrate his attention on the major problems. How far they are allowed to do this depends on the chief's powers of delegation, but it is obvious that unless much of the work is delegated, the successful control of a very large organization is beyond the power of an individual.

¹ *Executive Decentralization with Functional Co-ordination*. Paper read before Section F of the British Association for the Advancement of Science, Norwich Meeting, 1935, by Mr. L. Urwick.

² *Organization as a Technical Problem*, p. 2.

Organization Charts

In replanning a business organization, it is a very useful procedure to draw up first an organization chart as the organization exists at the moment. This is not always an easy matter because the responsibilities are not always clear and well defined. The next step should be to draw up a new organization chart showing the flow of authority downwards from the general manager, and indicating clearly the limitations of responsibility for each official. Then a list of duties which each official on the chart has to carry out should be made. Since direct lines of responsibility and clearly defined duties are the basis of all successful organization, many authorities on industrial organization place the construction of an organization chart as the first step in the reorganization of a business. The fact of having to make out the organization chart serves to clear up vagueness in the organization, shows up any duplication of control or any crossed or confused lines of responsibility. Some management consultants in planning a reorganization also draw up a 'movement of papers chart', which shows how each form moves from one person to another, and in addition they prepare a list or text to the chart describing in detail the information entered on each form or taken from the forms by each official. This procedure shows up any unnecessary duplication of information, and also where necessary information is not being received from other departments.

Duties should only be devolved on subordinates in accordance with a definite assignment. The exact nature of the authority or responsibility of each executive should be set down in writing at the time the organization chart is prepared. Identical authority should not rest on two or more persons and no individual should be responsible to two masters in the same sphere of answerability. The duties should be stated for each official in a clear, simple,

concise but complete manner. In building up an organization, the aim should be to provide a daily routine where possible so that the business may be operated with a minimum of day-to-day direction from above. Each person should know definitely from the detailed instructions given to him what is required of him. Only departures from routine, matters involving questions of policy, precedents or the like, should have to be referred by minor officials to their seniors. Where it is found that the chief executives are continually struggling with a mass of detail that threatens to submerge them, it is a sign that the business is badly organized. In a well-planned organization there should be a smooth flow of detail throughout the business, so that the higher management may be free to think constructively, and to devote their time to major problems, or variations from routine. They should not be harrassed by details or driven by their work, and there is much to be said for keeping a clear desk, provided an efficient live file system is maintained. They should also have ample time for receiving members of their staff, important customers and other persons, though they should cultivate the art of terminating interviews quickly, as otherwise their time will be wasted. The faculty of making quick decisions after the facts have been ascertained, and after the departments or officials concerned have been consulted is another valuable qualification.

Types of Organization

The structure of the normal industrial organization in this and other countries is generally the natural result of its growth. Concerns usually start in a small way, but when they have expanded to a fair size, some kind of planned structure of organization becomes essential. Otherwise confusion will arise, responsibilities may remain undefined, authority overlap and waste

remain unperceived. At this stage in the growth of a business, it becomes essential to outline clearly the various functions, to specify them in writing and to draw up a chart of the organization. The organization should be definitely planned quite apart from the personnel or individuals in the firm. After this has been done the individuals can be allocated to fill the various pivotal posts either from within the firm or occasionally from outside.

In the last century, the problem of organization was comparatively simple since the typical industrial unit was fairly small. The whole work of management, therefore, was generally within the capacity of an individual but as the size of the industrial unit increased, some of the work of management had to be delegated. In the same way to-day once a firm grows to a certain size, the manager's responsibilities may become so numerous or pressing that he cannot attend to them all properly. Adequate authority must, of course, be delegated at the same time as responsibility is shifted. The question that arises is: 'How is this devolution to be effected?' The possible methods of achieving such devolution may broadly be divided into two groups—that is, *either* the organization may be split up into a number of sections, the lines of division being determined according to differences in products, processes or areas, each under the direction of a sectional or departmental manager, *or* the management of the organization may be subdivided by reference to the various functions or techniques, each being put in charge of a specialist. But though it could be said that there are thus only two main types of organization, there are in practice many variations which result from a blend of the two in varying proportions.

The oldest and simplest type of organization is that known as the line or military or departmental organization in which there is a direct vertical flow of authority

downwards, and of responsibility upwards in a direct chain from the general manager to the foremen.

Line organization worked quite well as long as firms were small, and as long as industry was comparatively simple in character. It is still found to-day in smaller firms, in those where the work performed is confined to simple operations or processes, or in those larger firms which have recently grown from small beginnings. It is indeed the natural form of organization where a business has been carried forward by the initiative and driving force of an individual leader.

The advantages of line organization lie in its simplicity, the clear allocation of responsibilities and duties, the ease of securing good discipline and the fewness of crossed relations between the personnel. The main drawback is that it does not permit of much of that specialization which modern technical developments have rendered practically essential in many industries. But even apart from the necessity of technical specialization, there are other difficulties in operating a large and complex organization on a purely line basis. It is probable that a few key men in the firm will be overloaded with duties and responsibilities, while another objection frequently urged against line organization is that instructions and matters affecting more than one department may have to be passed up and down a ladder of executives. Thus suppose a problem arose which affected two workers in different departments, reference might have to be made from the foreman to a superintendent, thence to a sub-manager and finally perhaps to the general manager. The general manager might then have to initiate inquiries in the other department. Then the report would traverse the steps back to the general manager who would finally settle the matter and pass instructions down to both the workers affected. This involved procedure, it is true, may sometimes be avoided by a method

described by Henri Fayol in *Industrial and General Administration*, and known as 'Fayol's Bridge'. The immediate superiors of both the foremen in the above example would authorize their subordinates to discuss the matter on the spot with a view to adjustment by mutual agreement. This agreement would then be reported to the superiors. By construction such bridges solutions can often quickly be reached, whereas otherwise the problem might involve much waste of time and much writing backwards and forwards between various officials. But, of course, if agreement cannot be reached, resort has to be had to the hierachic ladder in the usual way.

Functional Organization

Growth in the physical size of industrial units and developments in the application of science to industry have forced managers to call in technicians and other specialists—engineers, chemists, chemical engineers, metallurgists, accountants, lawyers, statisticians, bio-chemists—and the incorporation of these specialists in the organization raised new problems.

The functional type of organization was evolved in an attempt to overcome the limitations of the simple line organization. It permits of high specialization since the units are built up according to functions or techniques, e.g. production, sales, purchasing, accounting, labour management, engineering, or transport, rather than according to areas, products or processes.

The functional divisions cut right across divisions as between products or processes, for example, a function- alized selling department would supervise the sales of all the products whatever the department or factory in which they were made and in whatever part of the country they were sold. A functional organization affords a form of division of labour among the higher officials akin to that of separation of processes in the lower ranks.

Each executive head takes charge of one technique only, but is responsible for this throughout the undertaking. The labour manager, for example, would be responsible for the recruitment, training and discharge of employees in all departments or sections of the firm whatever their grade or occupation. The transport manager would likewise be held responsible for the entire transport arrangements of the firm whether for raw materials or finished products and whether undertaken by the firm itself or by outside carriers. The result of such specialization is that individuals in the firm may receive orders or advice from more than one superior.

The great advantage possessed by functional organization is the amount of specialization which it permits. Individual executives can each concentrate on one particular type of work and thus are enabled to become expert in it. The system also assures that expert advice and control is available for all its main branches of activity since it is possible to incorporate a wide range of technical specialists within such an organization. No limit is placed on the expansion of the business through the elaboration of its techniques since whatever the size of the firm, the technical heads are only concerned with one type of activity.

But it has serious limitations and in consequence it has never become popular in this country, though it has been more favourably regarded in the U.S.A. Discipline may be weak owing to divided responsibilities. There may be difficulties in co-ordinating the work of the numerous separate functions and that of the several specialists. No doubt a certain degree of co-ordination may be secured through the formation of committees, but too much committee work may involve a severe drain on the energy and time of officials. In the last resort decisions may have to be made by the general manager who is confronted with the ever-present

difficulty of holding a balance between his experts. A fully developed functional organization is highly complex and owing to the number of experts to be consulted, decisions are delayed and much internal correspondence may be involved, sometimes descending to the ridiculous, since each expert may be jealous of his rights to be consulted. The functional system, it is often alleged, tends to produce narrow experts among the executives, and automatons among the workers. A purely functional organization tends to be highly centralized in its nature, and most of the control and planning of the work may be carried out in the central offices. This involves the danger that the central departments may become over-worked and encumbered with too much detail. Unless there is sufficient elasticity lower down in the organization delays are bound to occur and prompt action cannot be taken to meet local contingencies.

Line and Staff Organization

To-day in actual practice a purely functional type of organization is seldom found though likewise a purely line organization is not favoured by larger firms. To overcome the limitations inherent in these two primary types of organization a compromise policy has generally been adopted by large firms, though the mixture of the two ingredients of function and line varies from firm to firm.

A line and staff organization as this compromise is known in its simple form combines the main features of the two types. Usually a simple functional division is made between sales, manufacture, engineering and finance. The heads of each of the divisions are equal in authority, though not, of course, necessarily on a salary basis; each has certain defined duties and responsibilities, and also certain advisory or staff functions. Within each division the line principle for the delegation of

responsibility and authority is maintained. Line executives deal with routine processes and have less complex duties to perform, so it is possible to maintain vertical lines of responsibility for these duties, but wherever in the organization, expert knowledge and control are required, the line executives refer to the staff advisors. There is thus a direct vertical flow of authority in the line organization, but there is combined with it a horizontal specialization since the 'staff departments' are functionalized to deal with particular phases of the business. The foremen retain their one-man control over their operatives, but they themselves are guided and controlled to some extent by the functional departments connected with manufacture as well as by their immediate superior. The foreman can thus exercise his primary duties which are discipline and leadership, but at the same time he can obtain specialist advice from the various functional departments. The other functions of the business such as sales, purchasing, finance or accounting have no direct authority over the line or operating functions.

In very large firms which are concerned with the manufacture of a wide variety of products or which operate over a very wide area, it has been found necessary to evolve elaborate organizations of a 'federal type', in which the lines of division are on a commodity or territorial basis. Sometimes very complicated organizations of a hybrid nature are found combining the features of functional, territorial and commodity organization.

CHAPTER III

INDUSTRIAL RELATIONS AND LABOUR MANAGEMENT

THE complex relations now existing between employers and employees stand in sharp contrast with the simple arrangements which prevailed in the earlier days of modern industry. Indeed there has been a complete change in the attitude of the State towards problems of industrial relations. In the early nineteenth century, the State did not intervene between employers and employees, but left wages and conditions of employment to be determined by the free play of unregulated and sometimes one-sided competition, whereas to-day numerous legislative enactments determine the minimum conditions which must be adhered to by all employers. In marked contrast to conditions in modern large-scale industry, firms were then generally small, and there was thus a definite contact between employers and operatives. Industrial relationships, therefore, were less impersonal than is often the case to-day, and if dissatisfied, the employee of a small master had direct and immediate access to his employer.

It is true that small firms are still numerous, but technological and mechanical developments in industry have led to the growth of large firms, so that while over 85 per cent of the factories in Great Britain employ only 50 workers each or less, yet 67 per cent of the persons employed in factories are engaged in those which employ

more than 100 persons each. Only one per cent of the factories employ over 500 workers each, yet between them, they account for 29 per cent of the total number of factory workers.¹

In certain industries and occupations, there is still a close contact between employers and employed, notably in agriculture, domestic service, retail shops, road haulage, garages, and jobbing work such as that of plumbers, decorators, printers, gardeners or joiners. Even in coal-mining, generally regarded as a large-scale enterprise, there are 58 collieries in Lancashire alone which do not employ more than 50 men each, and of these 22 actually employ less than 10 men each.

In large firms, relations are impersonal, ownership is separated from management, and a hierarchy of salaried officials—often themselves exposed to considerable economic insecurity—has replaced the former personal contact of owner and employee. The mechanization of industry, it is true, has given greater scope for certain classes of skilled crafts such as those of pattern makers, tool, jig and fixture makers, and machine setters, and it is also true that some kinds of machine-minding—engine-driving and motor-lorry driving are examples—are interesting jobs. But for many factory operatives the work is necessarily highly specialized and repetitive, offering little or no possibility for the expression of individuality. Discontent and inefficiency may only too easily result from the routine and monotony or the uninteresting nature of much work in a modern factory, while other factors such as the subconscious fear of

¹ In comparison it may be observed that in France less than 30 per cent of the workers are employed in establishments with more than 100 men on their pay-rolls. In Eire about 87 per cent of the factories employ less than 50 workers each and the average number of persons employed is about 36 per firm.

must govern arrangements between employers and workers. Technological factors peculiar to large-scale industry have also been responsible for numerous rules which now govern working conditions.

There has been a very definite change in public opinion and the atrophied social conscience of the earlier part of the nineteenth century has been stimulated to a greater realization of human values.¹

On the other hand, the employees themselves have demanded and secured the right to apply the procedure of democratic government to the conduct of human relations in industry, and as a result the position of the worker is largely determined, and that of the management circumscribed by legislative enactments or by collective agreements freely negotiated between associations of workers and employers, such as the agreement of 1919, effected between the Railway Executive Committee and the Railway Trade Unions, which secured for the wages staff a guaranteed day and week, special overtime rates of pay for duty in excess of eight hours a day or for Sunday work, holidays with pay, and minimum periods of rest between duty turns. This democratization of industrial relationships is a natural result of the spread of education, the extension of the political franchise and the growth of trade unionism.

The extension of legal obligations, and the increase in the number of negotiated agreements has necessitated the development of machinery for their enforcement

¹ For example, in this direction the famous Encyclical Letter of Pope Leo XIII, issued in 1891 and entitled *Rerum Novarum*, has had great influence. Therein it was unequivocally laid down that 'to exercise pressure upon the indigent and the destitute for the sake of gain, and to gather one's profits out of the need of another, is condemned by all laws, human and divine. To defraud anyone of wages that are his due is a crime which cries to the avenging anger of Heaven', and further that: 'It is neither just nor human so to grind men down with excessive labour as to stupify their minds and wear out their bodies'

and interpretation. The administrative machinery for enforcing statutory obligations on employers and their workpeople is now very extensive. Important departments of the Central Government such as the Ministry of Labour or the Home Office are concerned largely with these matters; numerous specialist officials such as factory inspectors, examining surgeons, mine inspectors and many others are engaged continuously in this work, while special bodies such as the Trade Boards, Agricultural Wages Boards or the local insurance committees, have been set up to administer specific parts of our industrial or social codes. Likewise the development of national or area agreements as to wages, hours and conditions has necessitated the formation of joint industrial councils, conciliation committees, works committees and arbitration courts, while within the organization of individual firms it has been necessary to establish staff, labour or personnel departments to deal with all matters concerning employment.

The task of efficient, progressive and enlightened management to-day is to obviate where possible, and to palliate where that is not possible, the asperities, the monotony, the nervous or physical strain of industrial employment. The work which devolves upon management is very considerable, since it has now to provide for detailed regulations concerning hours of labour,¹ time-keeping, absenteeism, piece-rates, shop discipline, responsibility for the care of delicate and expensive machinery, welfare activities, industrial health, alleviation of monotony, and the selection and training of labour.

¹ As an example consider the problems involved in the formulation of duty schedules for workers in the road transport industry. The hours which may be worked per diem, the length of spells of continuous work and periods of rest and refreshment are laid down by law and these have to be fitted in with the exigencies of traffic and the working time-tables of the vehicles.

The attainment of good relations between management and labour is of the first importance from the point of view of output and efficiency. No firm can be really efficient if its workers are dissatisfied, and if its progress is hindered by industrial friction.

Labour Management

The growth of large-scale business and improvements in the status of labour have necessitated greater attention to labour problems, and special knowledge is required on the part of those responsible for labour conditions within the works. In a large undertaking whose employees may include workers in many varied occupations and crafts, cognizance may have to be taken of a great number of trade union agreements, of numerous regulations issued by Trade Boards, Road Haulage Boards or other bodies, and of general statutory requirements. In many large businesses, therefore, these problems are now the concern of a high official or even one of the directors. Employment managers, or labour managers have also been appointed by numerous firms. These officials have special responsibilities regarding such matters as the recruitment, selection and training of workers, labour turnover, methods and rates of remuneration, welfare work, accident prevention, and employee relationships generally, including possibly the functioning of works committees, suggestion schemes, or the investigation of grievances.

The significance of the new institutional developments that have taken place in industrial relations during the past forty years, and more especially the past twenty years, is not always fully realized. The new democratic procedure and authoritative State regulations have made the conduct of private industry approximate more to that

of a public corporation or department of State than formerly.

Further, if developed along the right lines, a labour management department may provide a feasible solution of two main problems in industrial relations of to-day, namely, the imperative necessity of finding some substitute in the large firm for those personal contacts which have been disappearing in modern industry, and, second, the necessity of treating workers as having each an entity and personality of their own.

In developing the study of problems of labour management, and in the pooling of experience among labour managers, important work has been done by the Institute of Labour Management (formerly the Welfare Workers' Association).

Selection of Workers

The usual method of selecting workers to fill vacancies is by a brief personal interview and a preliminary trial, following recommendation or direct application. Some firms take applicants only from the Labour Exchange, others prefer to advertise, while yet others only take persons recommended by workers already in their employ. For skilled workers, a trade test may be set to supplement inquiry about previous experience.

The actual selection is usually made by the manager or the heads of departments, though in some firms the choice may be left with the foremen. Where labour, or employment managers have been appointed, selection is made by them in consultation with the heads of departments. Separate employment departments are frequently established for men and women workers.

Increasing interest is now being taken in the application of systematic tests of ability, especially in the engagement

of juvenile labour, and many firms also insist on a medical examination. Some firms have adopted various psychological tests in addition to the interview to determine such qualities as general intelligence, reaction time, and co-ordination of hand and eye.

Among the advantages claimed by firms who apply selection tests, are greater accuracy in choosing the most suitable workers, a reduction in the training period required, increased efficiency, greater contentment among the workers and a reduced labour turnover. The basis of successful testing is an exhaustive analysis of the abilities required for the particular job, and then the devising of a test by which these abilities may be determined and measured. Thus a dressmaker might be tested for delicacy of touch and neatness, or a motor driver for nervous stability and speed of reaction to stimuli.

The tests applied by the G.P.O. in London for the selection of telephone operators afford an interesting example of the methods followed in making a scientific selection of workers. They are designed to measure manual dexterity, attention, speed of response to visual signals, auditory acuity and interpretation, memory for numbers and instructions, memory for a sequence of operations and general intelligence.

The series consist of written tests of intelligence and educational attainments, four performance tests and two written tests of verbal memory. The performance tests are given to the candidates individually and take about twenty-five minutes to apply. The intelligence tests take the form of a written paper which can be given to any number of candidates simultaneously, and for which the time limit allowed is twenty minutes. The memory tests occupy ten minutes and can be given to a group of thirty candidates at a time. The correction

of all the tests takes only a few minutes as a scoring key is utilized.

As a further example, reference may be made to a series of tests devised by Dr. E. Landauer for the selection of weavers.¹ He found, as a result of detailed time-studies, that in weaving, the greater part of the time lost in production is due to the necessity of knotting broken threads, and this time is increased as the weaver's knot is more complicated than an ordinary knot.

Dr. Landauer, therefore, devised a test which enabled him to decide whether an applicant for work would be likely to be good at making knots. He could not test applicants directly by asking them to tie a weaver's knot as this requires a good deal of practice, so, instead, he utilized a wooden frame with two sets of holes through which loose cotton ribbons were passed. Applicants were required to tie the ribbons with an ordinary knot as quickly as possible. The criteria of aptitude adopted were not only the time required to tie the knots, which on the average was 1.7 minutes, but also the way in which they were tied, firmness, neatness and regularity, and the behaviour of the applicants during the test. The results are said to be excellent. Other tests devised by Dr. Landauer included those for a sense of touch in which skeins of thread of different thickness were given to the candidates, who were asked to distinguish them; that for colour sense in which skeins of thread were again employed, some of which were of very similar shades; general intelligence and observation tests. Candidates were classified as 'unsatisfactory', 'satisfactory' or 'normal', and 'very good'.

¹ *Comment J'embouche mon personnel d'après ces aptitudes.* Bulletin of the Belgian Scientific Management Institute, 1934. Dr. Landauer's manager of several weaving mills in different countries in Europe, and the actual experiments were carried out in Romania.

In various countries, transport undertakings have adopted elaborate systems of psycho-technic methods for selecting their employees. As early as 1912, investigations into the scientific selection of tramway drivers were undertaken by Münsterberg in the U.S.A., while in 1918 the Greater Berlin Tramways began investigations in the selection of motor-men, and for years its psychological laboratory was among the best equipped and best organized in Germany. In Moscow, there is a transport techno-psychological institute and a central laboratory for research into the occupational diseases of railwaymen. Psychological laboratories have also been established by the German State Railway Company in Berlin, Dresden, Frankfurt, Mannheim and Cologne. City transport undertakings have also established laboratories for testing tram or bus drivers in Amsterdam, Barcelona, Brussels, Cambridge (Mass.), Hamburg, Milan, Paris and Philadelphia.

Generally, it may be said that the selection of workers for special tasks depends on discovering individual differences in aptitude, dexterity or mentality, which are important in the particular task, and then devising tests which will measure the extent to which those under test possess the desired qualities. It is obviously necessary to distinguish between those applicants who are already skilled, and applicants—generally juveniles, though not necessarily so—who are without previous experience. Usually those in the first class can be tested on the actual work, but if those without previous skill can be successfully tested, many advantages accrue both to the employer and the worker. The employer is saved the expense of training workers who eventually prove unsuitable or below normal efficiency in the task, and the worker is prevented from taking up a job for which he is not suited.

In Germany, selection tests are now conducted in some cases by the labour exchanges so that employers may be assured of obtaining workers with the necessary aptitudes.

A valuable check on efficiency of selection is provided by the 'exit interview', whereby all persons leaving the firm's employ are interviewed by a responsible official. The worker may not always, of course, give his real reason for leaving, but in general, the workers will do so and thus useful information becomes available regarding the workers' reactions to the various jobs and to the working conditions.

Training of Workers

A large proportion of the recruits to industry receive no systematic training, and have to gain their experience in haphazard fashion by assisting and observing other workers. Apprenticeship or training is seldom provided in mining, quarrying, textiles, paper making, iron and steel manufacture, or the distributive trades, and in these industries juveniles begin on light jobs where they gain experience by watching the older workers, and are promoted as vacancies occur, but, obviously, it is a matter of chance if they acquire good methods of working in this way.

Training schools have been introduced by a number of firms, either to ease the transition from school to factory life in the case of unskilled juvenile workers, or to provide systematic training in specific jobs for juveniles or adults.

In these training schools, the first few days, or even the first week of employment is devoted to classes of instruction and the entrants are shown the best way of doing the work. Sometimes a cinematograph is used

for the purpose, showing the operations both at normal speed and in slow motion, as, for example, by the Post Office Savings Bank in South Kensington.

Training is often based on movement studies which necessitates investigation into the essential motions involved, and an analysis of the best arrangements of materials and appliances. The new workers are then shown how best to carry out the work, allowing for individual differences in temperament and physique.

F. W. Taylor and his disciples did good work in insisting on the importance of training of workers, and in attempting to teach methods which involved a minimum of fatigue, but the rather crude idea of the 'one best method' has had to be modified.

Workers should be trained in broad general principles, and each individual should be helped to discover the best method of working in accordance with his or her own mental and physical characteristics. Wasteful or bad methods of working should be corrected in the early stages of training before they become habits, but this should not mean the enforcement of rigid standardization.

Instructional workshops equipped with all the necessary machinery are sometimes provided, and new workers are taught the processes in these training-rooms instead of in the factory. The number of firms providing systematic training is on the increase, and this is now a recognized feature of large-scale businesses, especially those that require large numbers of semi-skilled workers and utilize expensive semi-automatic machinery. It is true that many industrial tasks can only be fully mastered as a result of long experience, but even for these a course of training at the beginning of a worker's career enables him to profit more quickly from experience.

In addition to instruction in the actual technique of the work, many firms also endeavour to arouse an interest in the firm's activities by arranging lectures on the sources and nature of the raw materials used. An explanation may be given of the main processes followed in the factory, and this may be followed by a tour of the works. It is also usual to explain the welfare activities of the firm, the precautions necessary to guard against accidents and the various rules and regulations in force in the factory.

In the skilled trades, the usual method of training juveniles is still by means of the traditional system of apprenticeship or an equivalent system of learnership. Apprenticeship is still important in building, wood-working, engineering, shipbuilding, printing, pottery manufacture, glass manufacture, public utility services, and in Government-owned industrial establishments.

In apprenticeship indentures, the employer contracts to teach the trade to the apprentice who in return contracts to serve for a specified period of years. Other systems of training are less formal, but the worker is usually engaged for a definite number of years and is given facilities to learn a branch or process of the industry.

An inquiry undertaken by the Ministry of Labour in 1925-26, revealed that there were then, approximately, 315,000 boy apprentices, and 110,000 boy learners in Great Britain; that is about one-fifth of the male work-people under twenty-one years of age were receiving training either as apprentices or learners. It was found that the tendency was to substitute an oral agreement in place of a written indenture, and the traditional apprenticeship of seven years beginning at the age of fourteen years, had largely given place to one of five years commencing at the age of sixteen.

In the U.S.A., it is worthy of note, apprenticeship has declined during the last two decades, and in many industries, some other form of training requiring less time has been substituted.

In Britain, the normal method of training an apprentice is to attach him to a skilled worker. In addition some large firms have established technical classes on their own premises conducted by special teachers. This practice is found for example in the railway, engineering and shipbuilding concerns. In engineering, a pioneer firm in this connexion has been Messrs. Mather & Platt, Ltd., who founded a school at their Salford Ironworks as far back as 1873, which continued in existence until 1905, when it was closed down in view of the growth of suitable training facilities for engineering students provided by the education committees of Manchester and Salford. During the war, the question of training apprentices began to receive greater attention and in 1916, the firm introduced day classes for their apprentices at the Park Works, Manchester. The apprentices were required to attend for a short period each week during working hours. The instructors were drawn from the office and works staffs, and the results achieved were most encouraging. Later the firm entered into an arrangement with the Manchester Education Committee, by which a Day Continuation School was founded within the works, at which all apprentices between the ages of fourteen and seventeen years were required to attend. This scheme is still in operation and the school curriculum has no vocational bias until the third year. During the first two years instruction is given in English, industrial drawing, history, economics, elementary science, mathematics and physical culture. The third-year classes include drawing, science and mathematics, all

being treated from an engineering standpoint. As far as possible, examples and illustrations are taken from the boys' ordinary life in the workshops, and simple, but effective apparatus is used, much of which is constructed in the school itself.

The Metropolitan Vickers Electrical Co., Ltd., of Trafford Park, Manchester, is another firm which makes special provision for training apprentices, and for this purpose has inaugurated a work's school in which a two-fold curriculum is provided consisting of: (a) general educational subjects, including English, arithmetic, elementary science and drawing; and (b) trade instruction and lectures on industrial history and economics. Other firms which have established day continuation schools¹ in their own works include Messrs. Cadbury Brothers, at Bournville, Messrs. Tootal, Broadhurst, Lee & Co., Ltd., at Bolton, Messrs. Reckitt & Sons, Ltd., at Hull, Messrs. Rowntree, at York, Messrs. Boots Pure Drug Co., Ltd., at Nottingham, and Messrs. W. & R. Jacob & Co., Ltd., at Dublin.

An unusually ambitious scheme of training has been introduced by Messrs. Joseph Lucas of Birmingham, who have established a *whole-time* trade school with the object of training the highest grades of skilled craftsmen such as tool makers and tool setters.

A few firms, more especially in the engineering, building and printing industries, allow their apprentices to attend a technical college for one day a week, and at Rugby, day continuation school work is compulsory.

¹ Day continuation schools have been defined by the Board of Education as schools providing general education with or without vocational or domestic instruction, in part-time courses between 8 a.m. and 6 p.m., for students between the local exemption age and the age of 18. Such schools fulfilling the usual conditions are entitled to grants from the Board of Education.

under a by-law for those under sixteen years of age. Sometimes a day continuation school provided by one firm is attended by students from other firms by special arrangement, as at Cadbury's school at Bournville.

Many firms, though they provide no facilities to enable their young workers to attend day classes, encourage them, or may even require them, to attend evening classes in technical schools or colleges. Fees are often refunded by the firm if satisfactory progress is made, and prizes may be awarded to students who do well at the classes. The number of students of all kinds attending evening classes at technical schools in Great Britain is well over 900,000 a year compared with something under 21,000 in attendance at day continuation schools.

The ambitious worker should be given an opportunity to earn promotion or else, if he is retained on monotonous routine work, his energies may be devoted to activities undesired by the firm. It is not, of course, every individual who will earn promotion, but all should be given the chance to do so. Employees on their part must realize that promotion has to be earned.

Preparation for entry into certain industries is provided by junior technical schools for pupils from about thirteen years of age; the course of instruction usually extends over two years, but these schools are more part of the educational system than of the industrial system, and the time spent in the normal type of junior technical school does not count with industry as part of the period of apprenticeship.

In London there are about a dozen 'Trade Schools', and in the provinces some additional three or four. These, though usually classed as junior technical schools, differ from them in that a large proportion of the available time is spent in doing trade work, and much less

time is devoted to general education. The time spent at these 'Trade Schools' is usually regarded by the industry concerned as part of the apprenticeship or learnership.

On the Continent, considerable attention is devoted to technical education, and trade schools, definitely linked up with industry, have been established in many countries. Workshop instruction and workshop practice occupy a very large proportion of the time of the pupils, and, if anything, the tendency seems to be in the direction of making conditions approximate even more closely than in the past to those of the workshop.

In France, every employer who does not satisfy the authorities that he is providing complete all-round instruction for his apprentices has to pay a tax¹ of two francs for every thousand francs of wages paid to his workers, and the proceeds of this tax are devoted to technical education. By the *loi Astier* of 1919, employers are compelled, except in special cases, to release young workers for a number of hours each week so that they may attend courses of instruction. There is also a very widespread system of full-time technical schools.

In Belgium and Holland, the diplomas and certificates of the trade schools are awarded on the results of examinations conducted by juries of experts representative of employers and workmen in the industries concerned, and this has done much to stimulate interest in technical education.

In a report to the Board of Education,² it is stated that 'There is no doubt that in the countries visited (i.e. France, Belgium, Czechoslovakia and Holland),

¹ Known as *taxe d'apprentisage*.

² *Trade Schools on the Continent*, 1932. Report by Mr. A. Abbott, C.B.E., and Mr. J. E. Dalton. Board of Education pamphlet, No. 91.

more interest is taken in the technical education of apprentices than is generally taken in England',¹ and later: 'There is one lesson which can be taken to heart in this country without any reservations. There is on the Continent what may comprehensively be described as a "public interest" in the technical training of the workers such as is not found here. It is often said in England that the British workman is the best in the world. This he certainly was in many industries and may be still. But there is no guarantee that he will remain so unless our system of training craftsmen is kept abreast of the times; and it cannot be kept abreast of the times unless public bodies, employers and the workers themselves display an intense interest in the matter'.²

Training of Adult Workers

In some industries such as transport, it is necessary to provide facilities for training adult workers, either new entrants or those about to be promoted to a higher grade. The London Passenger Transport Board, for example, gives all its bus drivers a very thorough training, both theoretical and practical, in a special training school. The railway companies likewise have special courses of instruction for locomotive-men, signalmen, guards and others, while special arrangements have also been made for the provision of evening lecture courses at the universities for the clerical staffs. For road transport employees, the Royal Society of Arts has recently introduced a special examination scheme, and classes have been established in many cities and towns to prepare candidates for this examination.

Provisions for higher technical education have taken

¹ p. 11.

² p. 97.

the form of full-time senior technical courses usually extending over two years; part-time evening courses which sometimes, as at the Manchester College of Technology, involve attendance on two or three evenings a week throughout five years, and part-time day courses, involving attendance for one whole or one half-day a week. There is a tendency, as might be expected, for these courses to be localized in technical colleges in the main centre of the industry. Thus Lancashire technical schools provide specialized training in cotton textiles, engineering and chemical technology; Bradford and Hawick in woollens; Northampton in boot and shoe manufacture; London, Edinburgh and Manchester in printing; and Sheffield in metallurgy.

Duties and Responsibilities of Foremen

The foreman, because he is in direct touch with the rank and file of the workers, is a most important link in the systematic organization of an industry or works. To the workmen, the foreman represents the management, and they interpret the attitude of the foreman as that of his superior officers. To the management, he represents the workers and is the interpreter of their attitude and interests. His, therefore, is the key position between the operatives and the administrative staff, and the attitude of the men to the management is largely determined by the atmosphere created by the foreman in the workshop. Dr. Gilbreth, a well-known American authority on scientific management, has summarized the duties of a foreman under no less than forty heads, and of these the most important would seem to be:

- (1) Knowledge of how to exert authority and command respect.
- (2) Ability to carry responsibility.

- (3) A complete understanding of the work for which he is responsible.
- (4) Skill as a worker.

The correct choice of men for the position of foremen is a most important factor in the success of a factory. Bad foremanship can do great harm, and may be the cause of serious industrial friction between the men and the management. The foreman must be able to handle men, and persuade them to put in extra effort when needed in an emergency. This is where the 'bully' type fails, since the men will do no more for him than they can help. Various rules have been suggested as the basis of the successful handling of men, but though they are useful, especially in indicating what not to do, successful foremanship depends essentially on character and an innate quality of leadership. Among the rules, the following precepts would seem to be of importance:

- (1) Have no favourites.
- (2) Notice good work as well as bad.
- (3) Never show discouragement.
- (4) Always hear the other side.
- (5) Don't bully.
- (6) Never hold spite.
- (7) Don't criticize workers to each other.
- (8) Take your full share of the blame when things go wrong.
- (9) Never tell off a man before his subordinates.

The supervisory responsibility of the foreman will vary with the type of factory or other industrial plant, but whatever its size or type, his fundamental responsibility is the same. He must gain the confidence and active co-operation of the men working under him. Tact, fairness, initiative and resourcefulness are essential

qualities in a foreman. He is ultimately responsible for the real discipline in a factory, since if the foremen cannot keep discipline in their own departments, it will become lax throughout the factory.

Next, it is essential that a foreman should possess a sound practical knowledge of the work carried on in his department. He must know the proper sequence of operations, the capacity of the various machines, the use of jigs and other aids to production, the permissible tolerances in quality, and he must plan ahead so that each job is done by the most suitable machine, and so that all the materials and other requisites will be available when required. Primarily, his job is to co-ordinate labour, material, work and equipment during the actual process of production and he has to devote his attention to each aspect so that all the details requiring supervision are covered in proportion to their urgency. The importance of these different factors, as is self-evident, will vary according to the nature of the work carried on in the workshop. Thus in a chemical process, the essential details might be the length of the process time, the amount of pressure, the mixture of ingredients, the temperature, the colour, density or strength of solutions. In an assembly operation, the more important points would be the provision of all the components before the work starts, the rate at which the work is done and the correctness of the completed assembly. Where he is in charge of a battery of automatic machines, he would have to pay particular attention to the adequate supply of raw material, the quantity of output and the correct adjustment of the machines. His success or failure as a foreman can be measured by the way in which the work is planned in the shop, and by the way in which it is apportioned among the workers.

As regards costs, the task of the foreman is to see that from a standard amount of raw materials, a product of the required quantity and quality is produced at a minimum cost. Generally his responsibility begins when the materials are drawn from stores and finishes when the standard quantity of finished goods is passed on to the next process or to the stock-room.

Material costs can be reduced by the foremen attending to the avoidance of waste or spoilage and economy in the use of shop supplies. Low labour cost is attained by using the correct grade of labour on each job, by seeing that the men work steadily and by maintaining the correct relations between the numbers of direct and indirect workers. Finally, in connexion with such items as power, tool services, repairs and maintenance, the foreman can exert considerable influence in cost reduction.

In addition to their other duties, foremen may have to attend to such matters as the ventilation, lighting and temperature of the work-room. In the prevention of accidents, the provision, maintenance and use of safeguards in dangerous occupations, and the observance of statutory obligations, the foremen have also considerable responsibilities.

Generally the foreman should be a good craftsman, able not only to perform the operations himself, but able also to show any worker, when necessary, how to do his job in the best and quickest way. He should also know the working properties of the materials used, and any special precautions necessary in handling them. In a business of the jobbing type where there is little if any repetition in the jobs, great scope is provided for the exercise of initiative and ingenuity on the part of the foreman. Cost of production can in such works be

greatly reduced by a foreman with extensive technical and trade knowledge, and who is also possessed of a high order of manipulative skill.

All-round resourcefulness and initiative are required in a foreman where a range of similar articles is manufactured involving a certain amount of repetition work. The aim should be to put through the work in batches so that long runs may be obtained on each set-up of the machines.

At the other end of the scale, however, where production has become standardized, and mass-production methods have been adopted, the foreman's duties tend to become administrative in character, and there is less need for him to be an all-round craftsman since most of the details of production will have been worked out beforehand by the drawing office or planning department. The main duties of the foreman, therefore, are to see that his department works according to schedule, and to keep operating waste at a minimum. He must also maintain close co-operation with the foremen responsible for the processes immediately before and immediately after his own process.

Foremen are paid salaries on a weekly basis, and sometimes a special production bonus is added so as to encourage them to seek the most efficient methods of production, to reduce labour costs and to economize materials. In general, foremen are not members of the men's trade unions. The Federated Engineering Employers, for example, require all foremen to resign their union membership and to join the foremen's association. Some trade unions have attempted to force foremen to join the union, but this has been strongly resisted by the employers, and at present the accepted practice is that foremen shall not be members of a

trade union. There are, however, some important exceptions, for example, in the railway industry, foremen are usually members of the N.U.R.

Functional Foremanship

A logical outcome of functionalization in industry is the specialization of foremen, and it is probably in this respect that the earlier American functional organizations were most alien to British practice. Indeed in those British firms which have adopted an organization most closely approximating to the functional type, the foremen have generally remained unspecialized, though the work immediately above them is organized on a functional basis, and each foreman may receive orders from several specialized supervisors immediately above him.

Functional supervision of workers in productive departments was first advocated by F. W. Taylor in a book entitled *Shop Management*. Taylor's plan was to replace the general foreman by four functionalized foremen, who he termed respectively 'the gang boss', 'the speed boss', 'the inspector' and 'the repair boss'. Actually he described the proper number of foremen as eight, but as four of these were to be engaged in general planning work, these four were really staff men working not on the floor of the workshop, but in a production-planning office. Taylor's arguments, it is true, were based on engineering workshop practice, but no doubt similar principles might be applied in other industries.

The four foremen in the shops were in direct contact with the workers, each 'boss' confining his attention only to his particular function. Some of these foremen might only come into contact with any particular workman once or twice a day, and then only for a few minutes.

The duty of the 'gang boss' was to take charge of the preparation of all work up to the time that the piece was set in the machine, and to put the instructions of the planning department into operation. He was also responsible for seeing that each worker was supplied with all the jigs, templates and other necessary appliances for his task.

The 'speed boss' had then to see that the correct cutting tools were used for each piece of work, that the cuts were started in the right place, and that the best speeds, feeds and depths of cuts were used. The title 'speed boss' was perhaps an unfortunate one, as it might seem to imply an attempt to 'speed up' the workers, though it was merely intended to refer to supervision over the speed of cutting by the machine. It is now usually replaced in America by the name 'instructor' to prevent such misunderstanding.

The 'inspector' was responsible for the quality of the work and his duty was to reject all work not up to specification. The 'repair boss' had to see that each workman maintained his machine and workplace in proper working order.

Under Taylor's system of functional foremanship, each worker instead of coming into contact with but one supervisor, receives orders from a group of specialized foremen, each responsible for a particular function. Many objections have been raised to the idea of functional foremanship, and the idea seemed revolutionary and impossible in the eyes of most industrialists. Theoretically, however, there should be no conflict of authority unless the functions overlap, and this would only occur if the system were illogically applied. The idea has made slow progress in the face of a deep-rooted conviction, that no man can be expected to work under more than

one foreman at the same time. Nevertheless line foremanship of the orthodox type has been found somewhat wanting owing to modern developments in industry, but generally a solution has been sought along the lines of the introduction of staff or planning departments—incidentally one part of Taylor's system—than along that of the development of functional foremen.

Selection and Training of Foremen

In the past when a vacancy for a foreman occurred, the usual practice was to promote a good craftsman with years of loyal service to his credit. Promotion from the rank and file of the workers has the advantage of providing an incentive to ambitious workers, and it also secures that foremen will understand the difficulties of their subordinates.

Conditions in many industries have, however, changed considerably in the present century, and consequently the qualities and characteristics required in a good foreman, are in these industries considerably different from those required in the past. Formerly a foreman was a skilled workman whose job was largely confined to maintaining a high standard of workmanship, securing discipline in his shop, and to some extent training new entrants in their jobs. In some firms to-day the tendency is to limit the duties of foremen, and to introduce specialized assistants who take over responsibility for the technical branches of the work previously done by foremen. This movement was initiated by Taylor, who considered that the duties involved in adequate foremanship were too numerous and exacting for one man.

The foreman's job to-day has largely become one of

producing a given output with given materials with a given labour force, and his task is now largely circumscribed by statutory requirements, negotiated agreements, and various factory rules. His work though is not the less important and new responsibilities have come on him as a result of specialization of production. Co-operation between departments is essential. Further, elaborate methods of costing, time-keeping, routing, processing and rate fixing have become general, and even though responsibility for the details of these may not fall upon the foreman, he must be familiar with them in order to maintain the necessary degree of co-operation between his department and others.

In view of changed conditions, specific training for foremanship is now more urgent than formerly. The number of firms prepared to incur the expense and trouble involved in providing courses of training is, however, relatively small. Few technical schools or colleges make any provision for this type of training, and thus the matter has been largely neglected. The Institute of Industrial Administration is now attempting to improve facilities of this kind, and for the purpose has introduced a special certificate in foremanship, and is co-operating with the technical colleges in the matter. The training and selection of supervisors is becoming more and more important since the effect which a bad supervisor has on output, and on accident and sickness rates is a matter which industry cannot afford to neglect.

When firms have introduced training schemes, the method of instruction usually followed are those of discussions, conferences, or lectures, conducted either by responsible work's officials or by outside lecturers. Training is often spread over a period of two years, and in its most complete form includes :

- (1) Training within the works in such relevant technical matters as draughtsmanship, estimating, costing, production, testing, inspection, or rate fixing.
- (2) Lecture courses either within the works or in educational institutions in such subjects as economics, industrial organization, general knowledge of sources and nature of raw materials, nature of product, etc.
- (3) Conferences and discussions led by a competent official and visits to other factories.

Selection of foremen is carried out in different ways by different firms. Some will only make promotions from among those who have voluntarily attended the course of instruction though no guarantee of promotion is given to those who attend. Many firms require that men selected for training shall previously have had some experience in minor supervisory capacities such as that of 'leading hand' or 'charge hand'. Other firms make a selection of likely candidates from among the workers and after a course of training appoint those that seem best qualified. But whatever the method adopted, the general requirement is that the person selected should give evidence of possessing qualities such as adaptability, personality, tact in handling men, organizing ability, and a good knowledge of the work to be supervised.

Training of foremen in the U.S.A.

The development of the standardized mass-production industries of the United States has concentrated attention on the question of the training of foremen, and instruction is now provided in a variety of ways which include: (1) company courses; (2) courses provided by trade associations; (3) courses provided by several companies

acting in co-operation for the purpose; (4) courses provided under the auspices of State or Federal Boards for vocational education; and (5) courses provided by commercial organizations, including correspondence courses.

The methods of instruction vary considerably; some are purely lecture courses, while others follow the conference or discussion method. Incidentally it may be mentioned that the correspondence courses are popular and are accepted by many employers as a qualification in candidates otherwise suitable.

Some companies favour intensive conference sessions concentrated in continuous periods of a week or two weeks, during which the participants are released from their ordinary work. Other companies adopt a programme of instruction which extends over a period of a year or more.

The Federal Board for vocational education favours sessions held in company's time, an hour or two in length and held at fairly frequent intervals where the conference method is adopted, but lecture courses are usually held in the men's own time.

Generally, when a company provides the course, it meets all the expense though practice varies in so far as outside courses are involved; sometimes the men, sometimes the firms pay all the cost, and in other cases both contribute.

Foremen's clubs have increased considerably in numbers since the war, and they have been found to be a valuable asset in increasing the efficiency of foremen. Generally the main emphasis is on the social side, but some attention is usually given to educational work or to discussion of practical problems.

CHAPTER IV

ABSENTEEISM AND LABOUR TURNOVER

ABSENTEEISM—which may be defined as absence from work on days when work is available—may be classified as voluntary and involuntary. In the first case the worker is expected to turn out for work, but does not do so for reasons of his own, such as laziness, domestic or personal troubles, football matches or race-meetings. Involuntary or unavoidable absenteeism on the other hand is absence from work due to sickness or accidents.

Comparatively few studies have been made of this important subject, and it is difficult to obtain accurate and comparable information for any large number of firms. Absenteeism may be a serious matter to a firm if it is excessive, because it adds considerably to production costs and greatly reduces the efficiency of the factory as a whole. Extra work is thrown on the staff who are present, and thus the more-conscientious are liable to suffer. The effect of absenteeism on production varies in different industries and firms, but it is especially serious if the persons involved hold key positions and cannot readily be replaced temporarily by workers from another department, e.g. the absence of skilled ironers in a laundry, or of an electrician in a motor-bus garage. Sometimes it is possible to mitigate the effects by introducing schemes of alternative training so that 'bottle neck' workers have their understudies like the principals on the stage, though this can hardly be applied in very

skilled trades or where trouble might arise with the trade unions. To cope with absenteeism during influenza epidemics, or other exceptional periods, certain firms, such as Messrs. Hoover, Ltd. maintain buffer departments which are normally engaged on work for stock or reserve. The labour force in these departments is semi-skilled, and as many of these workers have had experience in the main production sections, they can take over jobs in other departments. On one particular day during an influenza epidemic at Messrs. Hoover's works, there was an absenteeism of about seventy-five per cent on the final assembling line, but, immediately, steps were taken to transfer workpeople from a buffer department, and the line was up to full strength within twenty-four hours. In this firm, departmental heads also move workpeople from one section to another within their departments as required.¹

In some countries, such as India, absenteeism reaches very serious proportions, and it is found necessary to have a surplus of labour on the books of textile mills to provide for such regular contingencies. Absenteeism and late arrivals impair discipline as well as interfere with production. Some firms, therefore, encourage regularity of attendance and punctuality by various devices, such as the award of bonuses for regular attendances or by the imposition of penalties for absence without adequate excuse. Others go further and 'follow up' absent workers through visits to the workers' homes.

But though a broad division can be made between voluntary and unavoidable absenteeism the classification is not rigid, and in actual fact the causes are of considerable complexity. Apart from accidents and ill health, it is found to vary with such factors as the age

¹ *Industry Illustrated*, January 1937, p. 25.

and sex of workers, earnings, length of the working day, local customs, or the distance between the factory and the workers' homes.

In any attempt to tackle seriously the problem of absenteeism, the first and essential step to be taken is to compile adequate statistics and records of absenteeism. Records should be kept on cards giving information as to the age, sex, department, date of starting employment, duration of absence, cause or reason given for absence, and medical diagnosis in cases of sickness. From the information thus available a very useful set of statistics can be built up analysing absenteeism according to sex, length of service, cause, duration, etc. The statistical unit employed in measuring absenteeism is *either* the number of days lost each year by every 100 workers, *or* the percentage of days lost out of every 100 working days. Where the number of persons employed fluctuates from week to week the average number of persons employed over the period is taken. Thus, for example, if an average of 450 men employed have a total absenteeism loss in the year amounting to 2,560 days, the absenteeism rate is 568 days per 100 workers. If out of 300 working days these 450 men among them lost 2,560 days, the percentage of absenteeism would be 1.9 per cent.

Only working days should be included in the record and Sundays and holidays should be excluded since what is being measured is absence from work, not the incidence of sickness, or other matters. Thus an absence on Friday afternoon, Saturday morning and all day Monday would be reckoned as two days. The records should be sub-divided at least as between men and women workers, though a more detailed analysis according to age, length of service, nature of work, etc., is very desirable. In seeking a remedy for a high absenteeism rate, it is

especially helpful to have the various causes tabulated according to their incidence, e.g. accidents, sickness subdivided according to medical diagnosis—colds and influenza, gastric troubles, rheumatism, nervous breakdown, etc.—or voluntary absenteeism. It is sometimes important to know whether the average rate is due to many workers having short periods of absence or a few absent over long periods. To determine this the rates for one-day absences and those for thirty days and over should be worked out. Useful comparisons can also be made between departments, and if wide discrepancies are discovered, further investigations can be made.

Sickness Absence

In firms where a medical or welfare department is in existence, workers should be required to report to the official in charge on their return. Some managers regard this as a waste of time, but it is a useful precaution as it serves to reduce absences due to trivial causes, and results in greater accuracy in determining the causes of absenteeism.

In a preliminary survey of absenteeism undertaken by the Industrial Health Research Board from material supplied by nineteen firms whose workers were engaged mostly in light factory work, clerical work or salesmanship, the range of sickness absenteeism was from 3.7 days to 11.4 days a year for men, and from 4.0 days to 18.3 days a year for women; where the sexes could not be differentiated the range was from 3.3 days to 9.2 days a year. In all the firms conditions were good, a medical department was provided, some form of selection of workers was undertaken, and pension schemes were in operation.¹

¹ Report No. 75, *Sickness Absence and Labour Wastage*, Part I, by May Smith and Margaret A. Leiper.

As regards sickness absence, the one-day absence is the commonest type, though this does not mean that it causes the greatest amount of sickness absence. Some firms definitely discourage those suffering from colds from remaining at work, and they believe that a day at home is useful in preventing a serious attack and in limiting the spread of infection among other workers.

'Analysis of the days of the week shows that there is more one-day sickness absence on Saturday and Monday than on any other day. Apart from the obvious implication such figures may hide an illness of three days duration, although only one and a half are working days. . . . Observation leads to the conclusion that the head of a department plays a considerable part in determining some of this absence. Where there is a general feeling that it would be unfair to stay away for an inadequate reason the absence is less. The lowest loss of this type occurred in a small unit of workers who under a very enthusiastic head, could not bear to be away lest the work should be affected.'¹

It would seem that the greatest proportion of sickness absence is due to influenza and colds for these together account for something between thirty and forty per cent of the total sickness loss. Women in general have a higher rate of sickness absence than men, age group for age group.

Unavoidable absenteeism has been estimated at 4½ per cent in coal-mining, 3 per cent in the railways (conciliation and shop grades), and 3 per cent among the male staff of the post office. In the coal-mining industry the high accident rate is an important factor.

¹ May Smith and Margaret Leiper, *Sickness Absence and Labour Wastage*, Report No. 75, Ind. Health Research Board, pp. 1, 3 and 15.

Influenza Epidemics

During influenza epidemics, sickness absentecism rates may rise sharply and cause a good deal of disorganization in factories and offices. During recent years some firms have paid particular attention to minimizing the effects of such epidemics on their staffs. Where a medical department is provided, employees are urged to go to it immediately they feel any symptoms of illness. Special precautions are taken to minimize the risk of infection in work-rooms. During the lunch hour all windows are opened, and the rooms sprayed with a germicide solution. It is said that the psychological effect of such precautions is of importance as it gives workers confidence, which some firms believe is a factor in warding off an epidemic. During a recent epidemic a large chain store sent round a letter to all the office departments giving a list of precautions and suggesting that when offices were vacated, all the windows and doors should be opened. Gargle was provided and the staff was recommended to eat plenty of fruit, get as much fresh air as possible, and avoid excessive heat or cold. All departments were regularly disinfected, and particular attention was paid to the telephones.¹ During the 1936 epidemic the Ministry of Health issued a memorandum on influenza, and in it urged employers to send home at once any workers who were obviously ill. It was also urged that where influenza is prevalent no person should be penalized in any way for staying away from work for even a slight attack of influenza, or any form of feverish cold. On the contrary workers should be expected and required to do so. 'At the first feeling of illness or rise of temperature the patient should go to bed, keep warm and seek medical treatment.'

¹ *Industry Illustrated*, Jan., 1937, p. 25.

Absenteeism in the Coal Mining Industry

Several investigations have been carried out in connexion with absenteeism in coal-mining and such information as is available is more complete for that industry than for any other.¹

The Royal Commission on the Coal Industry (1925) stated that 'The amount of time lost through the absence of the workmen for personal reasons amounted in the year 1924 to the equivalent of about four weeks of the working time of every man employed in the industry. In Cumberland it was as high as 39 days; in the eastern area it was 27 days; in Scotland it was only 11 days. These figures relate to absenteeism from unavoidable as well as avoidable causes'.²

The report also showed that the absenteeism rate was reduced as the hours of work were reduced. Before the Eight Hours Day Act, the rate was 10 per cent; while before the Seven Hours Act was passed it was 9 per cent, but after the passing of that act it fell to 8 per cent. If a uniform $4\frac{1}{2}$ per cent be deducted for unavoidable absenteeism the figures for voluntary absenteeism are respectively $5\frac{1}{2}$, $4\frac{1}{2}$ and $3\frac{1}{2}$ per cent—a striking reduction in twenty years.³

Absences are greatest among the hewers who are the best paid, but whose work in many ways is the most arduous. Absences are more numerous on certain days of the week than on others, and it would seem that this is determined largely by custom as it varies from district to district. In general, Mondays show the greatest degree

¹ e.g. *Royal Commission on the Coal Industry* (1925). Industrial Health Research Board, Report No. 51, *A Study of Absenteeism in a Group of Ten Collieries*. Report No. 62. *Two Studies of Absenteeism in Coal Mines*.

² Report Cmd 2600, 1926, p. 182.

³ *Ibid.* p. 183.

of absenteeism, and it is also often greater on the day after a holiday. Investigations also show that absenteeism varies to a marked extent with the depth of the workings.¹

Another investigation showed that 'absenteeism is greatly influenced by economic conditions, for when the possible earnings of the coal-face workers fell thirty-two per cent, the time lost by voluntary absenteeism fell to a half, and that lost by sickness fell to three-fourths, but absenteeism from accidents was slightly increased'.²

'Voluntary absenteeism appeared to be closely associated with the labour turnover at the various collieries, and with the distance the men had to walk underground from pit-bottom to working place. It was also related to the distance of the homes of the men from the colliery.'³

Working Conditions and Absenteeism

Unsuitable working conditions naturally tend to increase absenteeism. Thus long hours, unduly fatiguing work, unsuitable temperatures, inefficient ventilation or the like may raise absence rates well above the normal for comparable workers in other firms or industries, while attention to the workers' welfare may reduce them below the average. For example, a survey of the absenteeism records of nearly 5,000 women employees in 18 cotton mills showed that women who worked 55 hours a week lost 13 more days per annum than those working a 48-hour week.⁴

In the Indian textile mills of Bombay and Ahmadabad, absenteeism reaches a high figure owing to unsuitable working conditions and the very bad housing conditions, especially in Bombay.

¹ Vernon and Bedford, Ind. Health Research Board, Report No. 51.

² Vernon and Bedford, Ind. Health Research Board, Report No. 62, p. 33.

³ *Ibid.* p. 33.

⁴ Welch and Miles, *Industrial Psychology in Practice*, p. 11.

Among workers in the iron and steel trade who are exposed to high temperatures, about fifty per cent more time is lost through rheumatism than among those working at ordinary temperatures. The main cause seems to be that they do not change into dry clothes immediately after ceasing work, but wait till they reach home.

The one-day absenteeism rate is a useful test for measuring a firm's success in providing suitable conditions of work, and therefore it is well worth calculating.

Late Arrivals

Another problem allied to that of absenteeism is the problem of the late arrival. If the lateness is due to some factor outside the workers' control, such as fog, transport breakdowns or similar causes, the lateness is often condoned, though if a fog for example lasts more than a day or two workers are expected to make some attempt to arrive on time by setting out earlier from home. If a firm is too strict in its adherence to a rule about lateness, and if explanations of occasional lateness are not accepted in a reasonable way, workers may prefer to take a whole day off and obtain a medical certificate for ill health, as it is not difficult to find a pretext in some slight ailment.

Some firms give each of their workers a late allowance of fifteen minutes spread over the week, while others have introduced a system of monetary fines to act as a deterrent on bad time-keeping, though the amount of the fine is generally small and bears no relation to the actual production loss involved. In most factories however, workers who arrive late—perhaps after three minutes' grace allowed for clocking on—are shut out and lose a half-day's work.

Losses due to unpunctuality may be a serious matter since an average loss of five minutes per employee daily for a firm employing 200 workers at a wage of 10s. a day would involve a loss of £288 a year in wages alone paid out in return for no work, quite apart from losses due to idle plant.

A bonus plan has been adopted by some firms whereby one hour's pay is added to the earnings of all workers who work a full week without any late registration. 'This plan has been very successful in certain firms which had previously suffered heavy losses through lateness and absenteeism holding up the work of those who were present. The bonus in one case is not included in the weekly pay packet, but is credited to the worker and handed over in a lump sum at holiday times.'¹

Labour Turnover

The term labour turnover is used to designate changes in the personnel of a firm caused by the replacement of persons who have left its employment for any reason. Expressed in arithmetical form it is the ratio of the yearly or monthly separations to the average number of employees for that period. The simplest method of calculating labour turnover is to divide the total number of workers leaving during the period in question by the average number of employees on the pay-roll during the same period. Thus, if in a year 100 workers leave out of an average working force of 800, the labour turnover would be 100 divided by 800, that is 0.125 or 12.5 per cent. This simple method though useful enough in its way omits several important factors. It does not distinguish between different categories of workers, e.g. men and women, and it does not make sufficient allowance

¹ D. J. Garden, *Time-keeping and Wages Office Work*, p. 28n.

for permanent or temporary changes in the labour force of the firm. If, for example, 80 out of the 100 workers who left did so because they were dissatisfied with the conditions, it would mean something quite different than if they were paid off because of a seasonal or temporary depression in trade. It is, therefore, desirable to analyse the crude totals and work out the percentages for labour turnover according to various groups. Records should be kept separately for men and women workers; the turnover should be analysed according to cause of leaving and subdivided for different age groups, while further subdivisions might be made as between new and old employees or between skilled and unskilled labour. It is useful also to classify leavers according to length of service.

A moderate percentage of labour turnover is perhaps a good sign, but an excessive labour turnover is an altogether different matter. In the first place, a direct financial loss is involved since the taking on of new workers in place of those who leave means extra clerical work, interviewing of candidates by a responsible official, cost of advertisements, and extra work in the wages office. Second there is the cost of training or instructing the new entrants, including that involved in the lower rate of production during the training period.

It is estimated that generally it takes a new worker, even in comparatively simple operations, about three months to become fully proficient. It is also likely that there will be a greater amount of spoilt work among new entrants; they are more liable to accidents, sickness absenteeism is often greater and the wear and tear of machinery is likely to be increased.

Various investigations have been made into the financial cost of labour turnover, and in this country the cost

of replacing a worker would on the average seem to work out at about £2, though in some firms it is put as high as £10 per man. American estimates vary from 10 dollars to 200 dollars, or even 300 dollars, depending on the kind of work, cost of training, amount of spoiled work, etc., with probably 50 dollars as an average figure.

Mr. M. C. Hobart of the Albough-Dover Co. of Chicago, in 1918 estimated the various items in the cost of replacement as follows:¹

	Dollars
Advertising	0.50
Hiring and clerical work	0.75
Instruction	5.50
Wear and tear on machinery and tools	12.00
Loss of production	25.50
Spoiled work and mistakes	12.00
Accidents	3.00
Interest on extra equipment	0.50
	<hr/>
	\$59.75

Few firms in Great Britain keep adequate records of their labour turnover probably because they have not realized the importance of keeping a check on labour wastage. From such information as is available it would seem that in fairly normal years, labour turnover in industry as a whole is about 15 per cent, though in factories or employments where conditions are especially good the figure may fall as low as 5 per cent. Messrs. Peak Frean & Co., Ltd., which employed between three and four thousand factory workers recorded an astonishingly low labour turnover of 3 per cent in 1912, 1913 and 1914. Mr. B. S. Rowntree gives a figure for his firm in 1920 of 12.8 per cent for men and 13.1 per cent for women; the number of men employed being 2,966 and of women

¹ *Problem of Labour Turnover, American Machinist, May 16, 1918.*

3,712. 'In the case of women the turnover will always remain comparatively high, since all girls leave when they marry. Apart from those who left on that account the women's turnover is about 6 per cent.'¹

In continental countries, compulsory military service naturally has the effect of increasing the labour turnover among young men.

Compared with labour conditions in the U.S.A., employment is comparatively stable in Great Britain. The U.S. Department of Labour once reported that a certain factory which employed 50 workers on the average had a labour turnover of 1,200 per cent, while in Milwaukee there were 21 factories with an average of 26,662 employees actually working, and a loss of 37,016 in one year, that is 139 per cent. Though these are extreme instances of high labour turnover, and though they refer to pre-war years, labour turnover is generally much higher in America than in Britain though in compensation there is a greater degree of mobility of labour as between different industries and occupations than in Great Britain.

According to E. D. Jones, in the U.S.A. 'a turnover of 100 per cent per annum may perhaps be suggested as an average record for a manufacturing establishment. There are many plants with two or three times this figure, while during the war, rates were reported all the way from 300 per cent up to 1,500 per cent'.²

Causes of Excessive Labour Turnover

W. A. Berridge using statistics of 350 companies employing an average force of 600,000 persons gives a considerably lower average annual turnover of 48 per cent for the years 1924-29, 'voluntary quits' contributing

¹ *The Human Factor in Business*, pp. 76-77.

² *The Administration of Industrial Enterprises*, p. 423. New Edition.

about 62.5 per cent of all turnover. But even this figure is at least three times that for the average British firm. Another feature of American rates of labour turnover is that they vary enormously. M. S. Viteles, for example, quotes for 1932 a monthly labour turnover among electrical sub-station workers in Philadelphia of less than one per cent, whereas in a nearby city, taxi drivers in a large company had a turnover of about forty per cent per month.¹

A certain percentage of labour turnover is inevitable owing to retirements on old age, illness, marriage in the case of women workers, military service on the continent, change of residence, and similar causes. There are, however, many other causes which are definitely within the control of the management. Even sickness comes partially into this second category, since it might be foreseen or prevented by the management in some cases through a proper medical examination prior to engagement or by attention to the conditions of work. Wastage due to dismissals for incompetence or misconduct is also partially avoidable as the fault may be primarily in failure to take up references or to insufficient care in selection. In general, labour turnover is highest during the first few months of employment, and this obviously is largely the result of insufficient attention to selection of suitable workers.

In the U.S.A. it has been estimated that about a third of the leavers have served for less than a year, another third from one to four years, and the remaining third for over four years. It is also said that there turnover is largely confined to the comings and goings of a minority of the labour force, that turnover is larger among men than women, among workers on nightshift than on day-

¹ *Industrial Psychology*, p. 115.

shift, and that it is two or three times greater among unskilled workers than skilled workers.¹

Trade fluctuations are another cause of high labour turnover in certain firms and industries. But the difficulties of maintaining steady employment though considerable, are not always insuperable. Seasonal fluctuations may sometimes be overcome by dovetailing another process so that when one is slack the other is busy, or it may be possible to maintain sales on a more even basis through a more progressive sales policy. Departmental variations in the demand for labour can sometimes be reduced by instituting a system of inter-departmental transfers, by some re-arrangement of the work, or by putting the operatives on maintenance work.

Yet another cause of a high labour turnover is that of dissatisfaction on the part of the workers with the working conditions. Under this heading would be included not only such obvious causes of dissatisfaction as low wages, long hours or unduly bad conditions of working, but also such sources of irritation as a hectoring foreman, a nagging forewoman, insufficient prospects, lack of adequate transport to and from the works, inadequate machinery or appliances. Statistical investigations have shown that in ordinary circumstances by far the greater part of labour turnover is due not to dismissals but to voluntary leavings. The provision of good conditions both physical and psychological is the obvious remedy of excessive labour wastage of this type. Contented workers will stay with a firm; discontented will leave if they can. Attention to ventilation, lighting, sanitation and welfare amenities are thus necessary on the physical side, while good foremanship and the provision of pension funds, sickness funds and works councils on the psychological

¹ E. D. Jones, *Op. cit.*, p. 425.

side may make all the difference between a low and an excessive degree of labour turnover.

The setting up of a central employment department in large firms to deal with all engagements and dismissals, has been found of great value in connexion with problems of labour management, and not least as regards reducing labour turnover to a reasonable figure. This department should concern itself with the careful selection and the adequate training of workers, with the co-ordination of seasonal work, inter-departmental transference of workers and the training of semi-skilled or displaced workers for other jobs when necessary. In connexion with the reduction of labour wastage, an important feature is the 'exit interview', whereby every individual is interviewed on leaving the firm's employment. These interviews are generally arranged after the worker has given or received notice, but before the worker is finally paid off. The cause of the worker's leaving is ascertained and though the worker when he or she leaves voluntarily may not always give the real reason, valuable information can be obtained about the causes of labour turnover, and grievances may be brought to light. Sometimes the interview itself may suffice to remove misunderstandings, and thus serve to retain a valuable worker in the firm's service.

Before steps can be taken to reduce labour turnover it is essential to know the causes, and to attain this end records and statistics must be compiled. It may well be found that the largest proportions of leavings are due to one particular cause, and if this is discovered, a remedy may be possible. Essentially the remedies for excessive labour turnover are good selection of workers and good working conditions.

CHAPTER V

WORKING CONDITIONS AND FACTORY ENVIRONMENT

Temperature and Ventilation

The efficiency of industrial workers is considerably affected by the atmospheric conditions under which they work. Unsuitable temperatures lead to increased fatigue, greater liability to sickness and increased danger of accidents. Men engaged on heavy work at high temperatures such as is experienced in the manufacture of tin plates, or the production of steel by the open hearth process, show a maximum output during the coldest months of the year and a minimum during the summer.

In mining, work is carried on over a wide range of temperatures as the air temperatures vary with the depth of the seam. It has been found that even a small improvement in the ventilation of hot places distinctly improves efficiency. In hot and deep mines such as the gold mines of the Witwatersrand, the problem of maintaining a physiologically safe working environment is a very difficult one.

A cool, dry atmosphere with good ventilation helps to sustain physical energy and to increase efficiency. Air stagnation is to be avoided and the obvious remedy is to provide fresh air by means of a good ventilating system. Technical considerations affecting particular industrial processes may make it impossible to rely on fresh air for ventilation, but in such factories, a remedy can be found

in air movement since the most serious harm that results from stagnant air is generally its lowered cooling power rather than any chemical change in its constitution. The cooling power of air declines with rising temperature, increasing humidity and falling velocity of circulation. In a report of the Industrial Fatigue Research Board,¹ a good summary is given of suitable ventilation conditions. 'The air in a well-ventilated room should be (a) cool rather than hot; (b) dry rather than damp; (c) diverse in its temperatures in different parts rather than uniform and monotonous; and (d) moving rather than still.'

In certain technical processes, complications arise from the fact that humidity and high temperature may be necessary. The humidity of the air in factories, workshops and warehouses is becoming more and more important from the technical standpoint. The spinning and weaving of cotton, woollen, linen and cellulose fabrics require carefully regulated humidity. Humidity also affects colour printing, the brewing of beer, the manufacture of tobacco, the manufacture of sweets, the curing and handling of tea, and the tanning of leather.

In the weaving of the finer kinds of cotton and linen goods, it is necessary to humidify the air in order to reduce breakages of the warp threads, since the greater the amount of moisture in the air and the higher the temperature, the fewer are the breakages. A balance has thus to be struck in spinning and weaving between too little moisture in the air which would make the fibres intractible and too much moisture which would lower the efficiency of the workers.

Under the Factories Act, 1937 (Section 3), all work-

¹ Report No. II. *Preliminary notes on Atmospheric Conditions in Boot and Shoe Factories*, p. 7.

rooms must be kept at a reasonable temperature and if a substantial proportion of the work is done sitting and does not involve serious physical effort a temperature of at least sixty degrees must be maintained after the first hour of work. A thermometer must be placed in a suitable position in every such workroom. The Secretary of State is empowered to prescribe standards of reasonable temperature. The Act also requires (Section 4) that effective and suitable provisions shall be made in all workrooms for securing and maintaining adequate ventilation by the circulation of fresh air, and the Secretary for State may prescribe standards of adequate ventilation. In 'Humid Factories', that is those textile factories in which artificial humidification is produced by steaming or other means, hygrometers have to be provided and read twice daily. Records have to be kept of these readings and humidification regulated according to instructions contained in the Act (Section 52).

Noise and Vibration

During recent years increasing attention has been devoted to the study of industrial noises. This is to be accounted for partly by the increase in industrial noises and partly by a better appreciation of the harmful effects and waste of human energy which result from excessive noise. Many industrial processes involve noise, and in some the amount of noise produced may be exceedingly great. But even in factories where no specially noisy processes are carried on there is often an excessive amount of general noise due to the running of machines or movement of material, which results in a reduction in efficiency and imposes a strain upon workers. The amount of general noise is largely determined by the age, design and maintenance of the plant, and there is often a marked

contrast between older factories and those newer factories which have adopted modern transmission methods.

Human beings, it is true, show in time remarkable powers of adaptation to regular and continuous noises, but irritation and fatigue result even though they are not directly felt.

Factory noises may be divided into two types: (a) those which are more or less continuous, and (b) those which are sporadic. Examples of the former are textile spinning and weaving, braiding, steel rolling, and 'pounding up' in boot and shoe manufacture. 'Beetling' in cloth finishing factories where the material is subject to a rapid succession of blows from a series of mechanical hammers, is probably the most irritating of all regular process noises.¹

Noises such as rivetting, caulking, air compressing, rock drill forging and rubber masticating, that vary in intensity and are irregular and uncertain as to the moment of their production are disconcerting to most people, and are far more harmful than constant noises, or humming sounds, to which workers may become accustomed. Irregular noises interfere especially with mental work, and may also be very trying to workers engaged on monotonous work. Special care should be taken in factories to avoid locating machines for stamping, pressing, cutting or similar operations near the offices or those work-rooms where quieter work such as assembling, inspecting or packing is carried on.

In the noisy trades the workers who suffer most are those who are exposed to the noise for the longest time, and the noises which last the longest are the most harmful. Rivetters and holders-up after a number of years on such

¹ Report of the Chief Inspector of Factories for 1934. Cmd 4931, p. 27.

jobs tend to show a distinct degree of deafness in both ears and indeed so clearly marked is this occupational disability that it is known as 'boiler-makers' deafness'. It does not, however, incapacitate the workers for the particular work on which they are engaged.

Among factors which tend to aggravate the bad effects of noise on the human system are resonance, reflection and vibration. Resonance may vary according to the position of the worker in relation to the noise, while as regards reflection of noise, work within closed walls is more injurious than work in the open air. The harmful effects of noise are greatly increased when noise is simultaneously conducted by sound waves through the air to the ears, and by vibrations to the human frame from the floor or machine, e.g. as in occupations such as those of blacksmiths, tram drivers, compressed air drillers, or rivetters. Other factors which tend to increase the harmful effects of noise on the worker are fatigue and age.

Remedial measures

The best protective device is still that of utilizing ear plugs made of compressed cotton-wool moistened or steeped in some substance such as vaseline, glycerine or paraffin wax. The plugs, however, should be removed from time to time to allow of ventilation and to let out the warm air from the ear. Metal types of ear plugs are best avoided as they may break and fragments may penetrate into the interior of the ear. The use of ear plugs has been found to prevent cases of boiler-makers' deafness and also to increase output in certain trades. Thus in a Report of the Industrial Health Research Board of an investigation into the effects of noise on the output of weavers in a Lancashire weaving shed, it is stated that the average hourly output per weaver increased by about

one per cent when the workers used ear plugs. Weaving is largely an automatic process and the report points out that in consequence this figure does not show the full improvement realized, and it is estimated that the actual increase in the workers' efficiency was about twelve per cent.

Sometimes protective helmets are issued to workers engaged in very noisy trades where it is not possible to protect the workers in other ways. Workers dislike using helmets, as they interfere with their work and are uncomfortable to wear on account of their weight or pressure. Also they prevent workers from hearing orders clearly and may constitute an extra source of danger by diminishing the perception of unusual noises or the warning shouts of comrades and look-out men.

Where noises are transmitted by vibration, some protection may be afforded to workers by the use of straw mats, felt or rubber shoes, sprung chairs or by the fitting of springs to the machine. Other useful expedients are rest pauses and changes of work.

Noise it has been said is sometimes the best antidote to noise and advantage may be taken of this fact by placing machines which make a moderate continuous noise near those which periodically made a loud banging noise.

The isolation of noise by constructional methods involving the use of insulating materials has been successfully achieved in a number of factories, but the expense involved deters many factory owners from adopting this method. Probably they do not fully appreciate the indirect gain from increased output or greater efficiency that might result.

Numerous complaints arise from residents in the neighbourhood of factories where noisy processes are carried on and these indeed are more frequent than

complaints from the operatives. According to the 1934 Report of the Chief Inspector of Factories, these complaints 'emanate mostly from areas where industrial life is an innovation. Purely industrial inhabitants accept noise as part of their life. Indeed in Sheffield there is said to be an ancient usage known as "hammer rights", somewhat akin to "ancient lights", and it is apparently useless for neighbours to complain'.¹

Illumination

Though industrial lighting has made great advances during recent years, many factories are still badly lit. The value of adequate lighting is not always fully appreciated though in general the benefits to be obtained from modern lighting methods, far more than outweigh the cost of installation. Defective lighting adversely affects production by slowing down the rate of working and by increasing mistakes and spoiled work. Numerous investigations have shown that output is closely related to standards of lighting. Only if artificial illumination is sufficiently high, can daylight levels of production be attained. Investigations conducted for the Industrial Fatigue Research Board have shown that where low artificial illumination only was provided, production fell off by approximately eleven per cent in a linen weaving shed, and by ten per cent in silk weaving; both of these being fine processes. In a cotton weaving shed where coarse material was used production fell off by five per cent.

Defective lighting is an undoubted cause of many accidents, while it is also well established that prolonged exposure to seriously defective lighting conditions may cause permanent damage to eyesight and health.

The amount of light required depends on the nature

¹ Cmd. 4931, p. 28.

of the work and the reflecting power of the material which is being worked upon; some materials such as black velvet or the black sand used in foundry work reflect practically none of the light, while others such as glazed white paper or satin cloth may reflect a very high proportion of the light.

Good lighting is especially important for the perception of detail. It is necessary, however, where high standards of process lighting are employed, that the general lighting in the vicinity should be of a higher standard than the minimum usually necessary for safe passage and access, because the eye raised from the high intensity of the process lighting can only adapt itself slowly to a much lower standard of general lighting, and in the meantime accidents may result.

Mercury vapour lamps or sodium lamps have been introduced in various factories during recent years for general lighting with good results and in proportion to the amount of light given, they show considerable economy in current consumption. In foundries for example it has been found that they eliminate glare and shadow, while detail it is said is more clearly defined in the dark sand than by ordinary methods of lighting.

The essential requirements of a satisfactory lighting system in a factory are that the amount of light needed for the work should actually reach the point where it is required, and that the workers should be comfortable as regards the effects of the light. Illumination is measured in foot-candles—a foot-candle being the illumination produced on a standard surface by a standard wax candle one foot away.¹ Interior variations in day-light, which may range from 40 to 400 f.c. in a factory,

¹ The quantity of light from any light source may be measured by *lumens*. One lumen will illuminate one square foot of area to an intensity of one foot-candle.

do not affect workers greatly so long as the minimum illumination is sufficiently high. The relatively low intensity of interior daylight (it may be as high as 10,000 f.c. in the noonday sun in the open) is due to the small area of sky from which rooms usually receive light.

Natural lighting may be unsatisfactory, especially in old and unsuitable buildings, owing to internal obstructions such as pillars or machinery, inadequate window space, dirty walls or ceilings, or as a result of the temporary storage of materials, packing cases, or finished articles near the windows.

Natural lighting cannot be improved very easily in old factories because of the inadequacy of the original construction or planning of the works or because of the presence of adjacent buildings which shut out the light. Sometimes conditions can be improved by whitewashing the surface of an obstructing building or by fitting special reflectors or prismatic window glass to the windows.

Dirty windows are a very common cause of insufficient illumination and it has been found that as much as fifty per cent of the light may be absorbed. Tests made by the Department of Scientific and Industrial Research show that windows at ground level get dirty twice as fast in winter as in summer, and that ground floor windows get dirty more quickly than upper floor windows.¹

Dirty walls and ceilings also lead to an unnecessary loss of light since their reflecting power is considerably decreased. Much can be done to improve the general brightness of a room by providing light-coloured walls and white ceilings. These afford a very effective background to dark objects. In some modern factories, even the machines are now painted in white, while in others, improvements have been effected by the use of

¹ Illumination Research Technical Paper, No. 18.

aluminium paint. The problem, however, is complicated where the nature of the work involves the production of smoke or dust and in such plants, the only adequate remedy is some efficient ventilation system. Artificial lighting is entirely under the control of the management, and there is no excuse for failing to make the best use of illuminants of which the disposition and intensity are completely under control.

With artificial light, attention has to be paid to the number, position and strength of the lights, internal obstructions and the casting of shadows. The position of the light source relative to the work is especially important. Glare must be avoided and care should be taken to prevent reflection from polished surfaces.

Glare indeed is one of the most important problems in lighting, but there are still many factories where no attempt is made to eliminate the dazzle and irritation caused by unshaded lamps. Glare is the least excusable fault in factory lighting since it is easy to remedy and in general the remedy provides a more economical use of the light. It can be avoided, either by the proper shading of the light source, or by fixing the lights at a sufficient height above the worker. Adjustable light sources are advantageous as a means of eliminating shadows or glare and they are especially to be recommended when the colour of the material worked upon varies from time to time.

In some processes such as colour matching, or grading sugar and tobacco, it is necessary to provide daylight types of lighting and for this purpose special lamps can be obtained. In silk and rayon mills, where numerous colours are involved, excellent results have been obtained by a combination of high intensity mercury vapour lamps, and 500 watt standard electric lamps. This gives

a much whiter light than can be obtained from ordinary lamps alone. In operations such as the finishing of motor-car bodies where a clear definition of the surface is essential, mercury tube lights have been found to give good results because of the excellent diffusion secured. Flood lighting has been employed in some works, and local lighting largely eliminated.

Artificial illumination in factories is usually effected by general lighting and local lighting. In the former system the light sources are above head level, and provide approximately uniform illumination throughout the room. In local lighting particular machines or processes are separately illuminated by individual lamps placed near the work and acting independently of each other. Localized general lighting may be provided over important parts of the workroom where greater light is necessary. Whatever system is adopted, it is important that suitable reflectors or other devices should be used in order to prevent both waste and glare.

The Factories Act, 1937, prescribed that suitable and sufficient lighting must be maintained in all factories. Glazed windows and skylights must be kept clean, though they may be whitewashed or shaded against heat or glare. This Act also gives powers to the Home Secretary to prescribe minimum standards of lighting.

The Departmental Committee on Lighting in Factories in their Fourth Report published in 1938 recommended a minimum of 1.0 foot-candle over the interior working areas of any factory at floor level, or at three feet below the level at which work is carried on, without prejudice to the illumination required for the work itself. To ensure safe and efficient access within the factory, they recommended a minimum illumination at floor level of 0.5 foot-candle over all interior parts of any factory,

other than the working areas over which persons employed are liable to pass. For open yards, passages and roadways within the factory area, they recommended a minimum of 0.1 foot-candle.

Measurement of the actual illumination provided in any part of a factory can be easily effected by means of an instrument known as a photometer. The modern 'rectifier' type of photo-electric cell, has the advantages that no batteries or other accessories are required, and its use requires no experience in making photometric comparisons such as are necessary in older types of instrument.

Various tables of the minimum intensities of illumination required for numerous industrial processes are now available such as those published by the Illuminating Engineering Society. The adequacy of any particular installation can be readily tested by comparing the illumination available as measured by a photometer with the values recommended in the tables.

Industrial Fatigue

After a certain period of work, depending on the nature and intensity of the particular job, the body must have some rest, as otherwise the fatigue incurred will lead to a reduction in the energy and output of the worker. Fatigue is cumulative and therefore a sufficient interval must elapse between one spell of work and the next to enable the worker to recuperate his powers. Nearly all workers incur unnecessary fatigue through spending a greater or less portion of their energy in a wasteful manner. The aim should be to reduce this wasted and misapplied energy to the smallest possible amount since it diminishes the individual's efficiency by using up part of the physical energy that would otherwise be available for the day's work. Continuous and considerable

fatigue may also have serious effects on the health of the workers and may be a cause of high industrial mortality. For example, the average length of life of workers engaged in producing steel by the open hearth process is several years less than that of the ordinary labourers in the same works, though the former are specially selected for their physique. The main cause, it would seem, is the extreme fatigue caused by the work.

An obvious method of saving workers from unnecessary fatigue is to reduce whenever possible the distance which they have to reach for tools and materials. The greater this is, the greater in proportion is the amount of body movement required. The distance involved may be small, but appearances are deceptive and the slight extra exertions are cumulative. During the later hours of the day's work, these small extra efforts which have been repeated many times over, begin to have their effect. A tool rack placed a foot beyond a worker's easy reach is obviously in the wrong place. Even a few inches makes a difference because these few inches come at the end of a man's reach.

A simple re-arrangement of the articles required in the day's work may result in improved output. Crescent-shaped shelves may be substituted for straight shelves; the height of the bench may be adjusted and a place should be provided for everything so that the worker knows exactly where to put his hand.

An interesting example of the possibilities of improved working arrangements as applied in a laundry has been described in a publication of the Dutch Institute for Efficiency. In this laundry, the clothes were first emptied from the collecting baskets on to a chute which could be raised at one end when full so that the clothes slid down to the lower end in front of which a sorter was

seated, surrounded by containers for the different types of article. The sorter picked the clothes one by one from the chute and put them into the appropriate container, counting each article on an abacus attached at a convenient height to the fixed framework of the chute. Formerly the sorter had to change from a bent to an upright position and vice versa some 750 times a day. The increase in efficiency which resulted from the new method was as much as 100 per cent.

Though frequent stooping, bending or other body movements cause excessive fatigue, occasional changes of posture during the working spell may do a great deal to reduce fatigue. If the process is one which admits of the operative carrying out the job either in the standing or sitting position, workers should be definitely encouraged to change from one to the other from time to time. As far back as 1700, Ramazzini—the father of industrial medicine—insisted on the importance of change of posture, but even to-day the great advantage of changes in posture is not yet fully appreciated. They reduce fatigue, increase output and help to ward off sickness and occupational diseases.

Another matter well worth attention is the design of seats for workers both in the factory and the office, as there is still much need for improvement in regard to seating arrangements in most factories.¹ Seats should be so designed as to provide adequate rest for the small of the back even though the worker may have to lean forward to some extent.

It is also essential to provide instruction for workers regarding correct posture, for it is a waste of money to purchase good seats unless training is given as to their

¹ A great deal of useful information on this subject will be found in a Home Office Welfare Pamphlet entitled *Seats for Workers in Factories and Workshops*.

correct use. In canteens, it is desirable to provide chairs rather than benches as not only are these more convenient but they also afford greater opportunities for rest and relaxation after the work spell. An interesting example of the greater attention now paid to seating is that of the tramway industry. Formerly tram-car drivers had of necessity to stand while driving, so that they might have adequate control over the hand braking apparatus, but this is no longer necessary on modern tram-cars which are fitted with compressed air brakes. Seats are provided for the drivers, and this has meant greater comfort, reduced strain, greater efficiency in driving, and a lessened liability to foot troubles.

The 'Work Curve'

In general the output of workers is not uniform throughout the day. At first, production is low during the initial 'warming up' period; then production reaches a maximum, only to fall away owing to fatigue or boredom. A partial recovery sometimes takes place as a result of a decrease in fatigue from the slower rate of working or because the worker becomes conscious that output is falling off, but this is again followed by a fall. Towards the end of the period of work, production may again increase, this being known as an 'end spurt', and is due to the fact that the workers see before them the cessation of their tasks. Sometimes, however, the output at the beginning of the period of work may be large, though as in the case of the amateur gardener this may be due to the fact that the worker has started at a rate which he cannot keep up. This initial spurt is of slight industrial significance, but the 'end spurt' is important, for example, in connexion with monotonous work. Output can sometimes be increased by making

use of the 'end spurt', as it has been found that production may be increased when the work is presented in separate and not too large blocks of material, rather than in a long apparently endless whole. In one factory, it was found that girls engaged in sorting tray-fulls of fruit, doubled their daily output when the fruit was given to them in trays of half the original size. On the other hand, the unit must not be too small, as boredom may result from too frequent repetition of the same job. Workers engaged in soldering wires in radio sets, for example, expressed a definite preference for fixing eight or more wires per set, than two or three.

An interesting comparative study of the output of men and women workers has been made by two Italian investigators, Dr. D. Vampa and P. Guidi, who carried out a detailed analysis of two groups of workers, one consisting of twenty-four male workers, and the other of twenty-two female workers. Both groups worked in the same factory, under the same conditions as far as time and surroundings were concerned. The work also was similar except that the women's tasks were easier. The main facts revealed by the analysis were (1) the men's output was lowest at the beginning of the work, both in the morning and afternoon spells of work; (2) the women workers showed the lowest output at the end of the working period, both morning and afternoon; (3) the men reached their maximum output at the end of $2\frac{1}{2}$ hours in the morning; (4) the women's maximum output was reached after $1\frac{1}{2}$ hours in the morning; (5) with the men, there was a rapid increase in output during the first hour of the work; (6) with the women, there was an abrupt decrease in output during the last hour of work.

The 'Output Curve' shows in graphical form the worker's variation in output from hour to hour, from day

to day, or from week to week. Output is plotted on the vertical axis, and the hours on the horizontal axis. The curve should represent only those variations in efficiency which are directly due to the worker and therefore any reduction in output as a result of breakdowns in machinery, defects in the supply of raw material, etc., should be considered separately. The work curve will naturally be found to vary for different operations and different working conditions.

Rest Pauses

It is now fairly generally recognized as important that workers should be allowed adequate rest pauses during the day and numerous practical experiments carried out in many countries have demonstrated the beneficial effects of the introduction of appropriate rest pauses. Most firms adopt a working day divided into two work spells of about four to five hours each separated by an interval of about one hour for the midday meal. Formerly when a fifty-four-hour week was worked there were usually two breaks for meals, but now there is generally only one, and this may mean that workers travelling some distance to their work may go as long as six hours without a meal. No doubt during these long spells of work, rests are taken surreptitiously; sometimes they are involuntary owing to a breakdown in machinery or some interruption in supplies of materials. Surreptitious pauses are not as effective as organized and officially recognized rest pauses, because the worker cannot relax completely, while interruptions often cause annoyance and irritation.

Experience among firms which have introduced rest pauses has shown that output is increased often from about 5 to 10 per cent, and sometimes even by as much as 15 per cent. The quality of the work may also be

improved, and the health of the workers generally benefits leading to reduction in the amount of absenteeism. It must not be imagined, however, that the inevitable result of the introduction of rest pauses is an increase of output because in some experiments little or no improvement has been shown.

If the best results are to be obtained, rest pauses should not be introduced in a haphazard fashion. Their length and position must be carefully determined in relation to the type of work and the amount of fatigue and boredom involved. A study of the work curve of the group of workers concerned will provide the key to this question, and the rest pauses should be introduced just before a fall in output is due to occur as they will then ward off boredom or fatigue and maintain output at a higher level. The full effects may not manifest themselves at once, and the experiment should be given a fair trial. The period of adaptation has been found in some works to be as long as six months.

The length of the rest pauses must also be carefully considered, since if they are too long the worker may have to 'warm up' again to the task, and if too short, they may not serve to remove fatigue. In practice the length is often five minutes, ten minutes or fifteen minutes according to the nature of the work.

The value of the rest pauses may be increased considerably if the workers are given refreshments, and many firms make a practice of providing tea or milk free of charge or at nominal cost during the rest pause. The beneficial effects are also increased if the workers are allowed to leave the workroom; at least they should be encouraged to change their posture; those workers who have to stand at their jobs should sit down, and those who have to sit should stand and walk about.

Boredom and Monotony in the factory

In many industries, repetition processes have increased in number, and work formerly varied in character has become standardized and uniform. The repeated performance of identical movements which is necessitated by standardized production, provides little or no opportunity for the exercise of thought or skill on the part of the operatives and also imposes restrictions on their personal desires or abilities which may induce a marked degree of boredom. Even creative work when it becomes repetitive may be tedious. Thus the work of a potter, interesting in itself though it undoubtedly is, will probably become dull if the craftsman is continually making exactly the same type of article. In the interests of efficiency and human contentment, it is very necessary that industry should seek means of removing or at least reducing the causes which are responsible for undue monotony and boredom.

Boredom, it would seem, is a subjective experience that varies with individuals and is not merely dependent on the routine nature of the work. The personal equation enters largely into the matter and some workers appear to like repetitive work, others are indifferent and yet others dislike it intensely.

In an investigation carried out in four factories for the Industrial Health Research Board,¹ it was found that among female operatives engaged on repetition work, 3 per cent of the workers were practically free from boredom, 33 per cent were slightly affected, 38 per cent experienced a moderate degree of boredom, 23 per cent suffered severely and 3 per cent were never free from boredom.

¹ Report No. 77, *Fatigue and Boredom in Repetitive Work*, by S. Wyatt and J. N. Langdon (assisted by F. G. L. Stock).

Similar investigations carried out by the National Institute of Industrial Psychology show that among women workers engaged in tasks such as soap wrapping, chocolate packing, electric lamp filament winding, or tobacco weighing, individuals react very differently to repetitive work. Probably the conditions most conductive to boredom are found where the work is neither completely automatic nor skilled, since then attention is neither entirely free nor concentrated.

In part it would seem that freedom from boredom is dependent on ability to think of other things while working. Adaptation would seem to play an important part in determining the ultimate attitude of the worker towards his or her conditions of work. Some workers find relief in conversation, others in day-dreaming, while yet others find the incentive of piece-rate wages sufficient to overcome their dislike of monotonous tasks. The more intelligent workers find greater difficulty in combating boredom arising from repetitive work as do those also who are ambitious and anxious to get on.

Since boredom is due to an awareness of the monotonous conditions of work, its alleviation will depend on the extent to which the mind can be distracted from these conditions. Change of work, therefore, may often serve to eliminate boredom and many firms have found that output is considerably increased where change-overs in monotonous work are made. Too frequent changes, however, should be avoided, since at each change the workers may have to warm up to their new tasks.

Day-dreaming or reverie is one of the most effective antidotes to boredom, but day-dreaming is only possible where the work is simple and free from interruptions. Talking is another effective antidote, but it is dependent on workers being located sufficiently near to each other,

and also it may distract workers from work which requires visual attention. Singing and music are not open to this limitation since they appeal to the ear rather than to the eye. An increasing number of firms, therefore, encourage music or singing in their workrooms as they believe it leads to increased output and greater contentment.

In a large chemical works in the Rhineland, for example, the management encourage the girls employed in packing to sing and the firm engages a singing master for the purpose, finding that the expense is more than repaid by the greater output. Messrs. W. Symington & Co., Ltd., of Market Harborough have stated that output was increased by over ten per cent when they installed loud speakers in their packing-rooms providing music from gramophone records. They also state that there was a marked improvement in the health of the operatives. Yet another example is that of a knitted-wear factory at Wythenshawe, Manchester, where loud-speakers broadcasting radio music have been provided in the work-rooms. In an investigation carried out for the Industrial Health Research Board it was found that the highest output was obtained with one-steps, while quick and lively march tunes or light music gave rise only to a relatively small increase in output. That music and song are useful antidotes to boredom is no new discovery, for it was customary among medieval craftsmen to sing at their work, and Shakespeare has made Falstaff say: 'I would I were a weaver, I would sing all manner of songs', and sea chanties have played their part in regulating and assisting the performance of seamen's tasks in the days of the sailing ship.

Since different individuals react in different ways to monotonous work, every effort should be made to select

individuals suited by temperament to the particular tasks. Even small differences between one process and another may have widely different effects on the operative, and it is therefore desirable to give beginners a short trial on different types of work with the object of assigning them to the types they like best. Suitable vocational tests may also usefully be applied to determine the suitability of individuals for particular kinds of work, since the amount of boredom experienced is dependent on personal characteristics.

The Five-day Week

In recent years there has been a slow but growing tendency to substitute a five-day week in place of the customary five and a half-day working week. The five-day week is not, of course, to be confused with short-time working, since an essential feature of the scheme is that a full week's pay should be given for the five working days. It has been introduced by firms of varied size in a variety of industries including, for example, the Ford Motor Co., Ltd.; Bryant & May, Ltd.; Chiswick Products Ltd.; Benn Brothers Ltd.; Kleen-e-ze Brush Co., and Workwear Ltd. There is little evidence that firms which have once adopted the five-day week resort to Saturday working except in a few cases where it has been found inconvenient to have the factory closed on Saturdays.

The five-day week cannot be adopted, however, where continuous processes or continuous shifts are worked during the twenty-four hours, unless special arrangements are made. Generally also the system cannot be applied to the office staff as letters have to be answered on a Saturday morning or orders dispatched, though some firms who have adopted a five-day week in the factory,

allow half the office staff off each Saturday. A few firms, such as Workwear Ltd., of Liverpool, close their offices on Saturday mornings, and it is said that no inconvenience to customers has been noticed. Benn Brothers Ltd.—the publishers—also work a five-day week and have found it feasible.

As regards the number of hours worked a week after the introduction of a five-day week, practice varies a good deal. Some firms work shorter hours, but others spread the hours saved on Saturday mornings over the rest of the week, though they may reduce hours by about two per week, say from 48 to 46 or from 47 to 45. The great majority of firms which have adopted the five-day week work about 45 hours a week, and only a very few 40 hours per week. Where 48 hours are worked in the five days it may be found that the longer spells of $9\frac{1}{2}$ to $9\frac{3}{4}$ hours per diem are really too long, and that output may suffer especially in the case of women workers, and the two days' holiday a week may not compensate for the extra fatigue involved during the working day.

Advantages of the five-day week

(a) To the workers

The five-day week has proved especially popular in those areas where workers have to travel long distances to their work and there would be undoubted advantages in such circumstances even if the total number of hours worked per week remained unchanged.

The five-day week also has the advantage of enabling workers to obtain more leisure and of encouraging them to participate in sports, hobbies or gardening instead of watching others play games. One firm, however, it is related, found on introducing a five-day week that the workers' wives objected on the ground that the men

were in the way at home, but after some weeks this domestic difficulty solved itself as the men took up hobbies such as allotment keeping.

The free Saturday and Sunday give the workers leisure in an agreeable and convenient way. Concentrated leisure is more usable than a similar amount of free time broken up into small daily instalments. The five-day week in the opinion of many of its advocates provides a means of obtaining that recreation which is essential to counteract the greater monotony of modern factory work.

(b) *To the employer*

An employer about to introduce a five-day week without any reduction in his wages bill will naturally have to ask himself 'How far is it feasible?' First, attention will have to be given to the nature of the processes and the requirements of his customers. In some industries difficulties of this nature may render the scheme impossible unless some special shift system is arranged.

Next the effect on output will have to be considered and it will have to be decided if the same or a smaller number of hours per week are to be worked. In this connexion, reference may be made to the experience of a certain firm which, before putting a five-day week into operation, took records over a period of four weeks of each day's output and expenses. The figures were charted and the charts showed a gradually increasing ratio of expenses to output as the end of each week approached; Saturday mornings showing up as the most expensive working period. The staff were not informed so that normal working could be studied. After a month's trial of the five-day week, the charts were again examined and it was found that the weekly output had risen by over three per cent, and that there was no noticeable

falling off in production on days near the end of the week.¹

Another example quoted in the Bulletin of the International Management Institute for May, 1933, is that of a small factory in Bristol employing about 230 workers. During a slack period, the management found it necessary to close the factory on Saturday mornings, but it soon became evident that production could be maintained as easily in five as in five and a half days. The firm therefore, decided definitely to adopt a five-day week of forty-two and a half hours. Piece workers did not sustain any financial loss as they were able to make good their production, but time workers were paid a bonus of ten per cent on the forty-two and a half-hour week so that they suffered practically no loss in wages. Probably in most factories, not a great deal of work is done on a Saturday morning for it seems to be the general experience that workers tend to take it easy on Saturday mornings.

The third point to be considered is the possibility of effecting any savings through the closing of the factory on Saturday mornings. Overheads such as the cost of heat, power, light and steam-raising after Friday evening can be saved while in some industries, plants which are only required for special work can be closed down for the week-end, e.g. furnaces, refrigerating plants or travelling ovens.

Finally, there may be incidental advantages to be taken into account such as reduced absenteeism and better time-keeping. It is a general experience to find that absenteeism is greatly reduced, and one firm for instance reports that Monday absentees are practically eliminated. Workers are more contented and they enjoy better health,

¹ *Business*, March, 1933.

provided that in the case of girls and women workers the daily hours are not too long. One firm, for example, found that their hours, namely 8 a.m. to 6 p.m., were rather too long for the girls and therefore reduced them to forty-four per week. Another advantage obtained by firms while the five-day week is still the exception is that they can obtain the pick of the labour market.

Plant and machinery can be more thoroughly maintained and overhauled while standing idle on the Saturday mornings and this is of considerable value to the engineering and maintenance departments. To equalize conditions, the maintenance staff can be given an afternoon off during the week in place of Saturday mornings.

In the United States, an investigation undertaken by the Bureau of Labour Statistics showed that in 1932 about 1,200 firms had adopted a five-day week, and of these 516 were manufacturing concerns. The five-day week, it was reported, had taken a strong hold in the automobile industry in which 136 firms worked the five-day week and in the electrical apparatus industry where 74 had adopted the system.

CHAPTER VI

INDUSTRIAL WELFARE

Scope of Welfare Work

Welfare work covers a wide range of activities, and the type of welfare work to be recommended for specific factories or industries naturally varies according to the nature of the industry, the situation of the factory, the size of the particular works, the type of labour employed and other special circumstances. In general it may be said that welfare work includes all that bears on the health, general well-being, safety and efficiency of the workers. More specifically the term covers the provision of good conditions in regard to heating, ventilation, lighting, cleanliness and sanitation; the prevention of undue fatigue by devices such as rest pauses, change of work or provision of seats; the prevention of accidents; medical or dental supervision; recreational facilities of all kinds; housing; pensions; thrift schemes; holiday arrangements; transport to and from the works; provision of mess-rooms, canteens; first-aid appliances; or the provision of protective clothing. In some of the large firms, welfare work has tended to broaden out to include the selection and training of workers as well as welfare in the narrow sense. In all welfare schemes care should be taken, however, to avoid interference with the private affairs of individuals, and the management must not dictate as to how employees are to use their leisure. Care must be taken in regard to introducing certain

types of welfare work such as housing, because employees may feel that it gives the firm an economic hold over them, thus creating hostility rather than good relations. It needs also to be emphasized that no amount of welfare work will compensate for low wages or economic insecurity.

Statutory Welfare

A fundamental principle now recognized in the industrial codes of all civilized countries is that a worker is entitled to, and the State has a duty to secure him, protection against accident and injury to health as well as a minimum standard of comfort as regards conditions inside the factory. Generally speaking, the standard has been rising since the early days of modern industry; usually the first stage being that in which the best employers adopt a higher standard than the average, later this becomes fairly general among reputable firms, and finally the State steps in to make these better standards universal. In some cases, of course, the pace has been set by the State at the outset, but this has not been usual in Great Britain.

The introduction of power-driven machinery and the factory system in the eighteenth century created an entirely new set of social conditions. Then, and during the early part of the nineteenth century, the social conscience was at its lowest ebb. The old personal tie between the craftsman employer and his handful of assistants was disappearing and was being displaced by the large factory. Self-help through the trade union movement was yet to come for then factory workers, unlike the older skilled craftsmen, were unorganized. Severe competition and the disorganization caused by a great and prolonged war were also responsible for forcing

the more benevolent employers to follow the lead of the less scrupulous, though there were some notable exceptions.

In the textile industries, the new machinery rendered the work so light that it could be performed by young children, while the expensive nature of the machinery made it seem to be to the interest of the employer to work it for as long hours as possible; there was indeed a theory current that profits were made in the last hour or two of work, the previous efforts being required to cover costs. Thus in combination the unrestricted greed of unscrupulous employers, the tyranny of overhead costs, unmitigated competition and the absence of State control, combined with war-time conditions, led to a terrible exploitation of child life and of adult workers.

No doubt something can be said in mitigation; ultimately mechanization led to a great rise in standards of living for all classes, the State was inexperienced in the control of the new industrial forces, war-time conditions turned attention away from home problems. Long hours of work were no new phenomenon, but under the new conditions, long hours were systematized and the unfortunate children were employed, not by their parents, but by strangers and were subject to the severe discipline of the factory.

To ameliorate the social consequences of the revolution in production methods, there was gradually developed a new code of industrial law which set up minimum standards for the safety, health and welfare of factory employees. The first factory act was the 'Health and Morals of Apprentices Act', passed in 1802, but its scope was very limited. It applied only to parish apprentices who had been bound out by parish authorities and did not affect children who went out to work with their

parents. The Act 'was in reality not a Factory Act properly speaking, but merely an extension of the Elizabethan Poor Law relating to parish apprentices'.¹ In only one respect did the Act extend beyond this limited application, and that was in regard to woollen and cotton factories, which were to be properly ventilated and whitewashed twice a year.

Subsequent Acts of 1819, 1825 and 1831, though they applied only to cotton textile mills, extended State regulation to children and young persons other than pauper apprentices, prescribing the minimum age of entry to factories (9 years), limiting the hours of labour (12 hours) to persons under 16 and subsequently 18, and prohibiting night work to young persons.

The main developments in factory legislation during the nineteenth century subsequent to these early statutes can be grouped under four heads:

- (1) Improvements in administrative efficiency.
- (2) The inclusion of women among the class of protected persons.
- (3) The extension of legislation to other than textile factories.
- (4) Definition of factories and workshops necessitated by the extension of the acts. Eventually nearly all phases of employment came under the regulations.

The Act of 1833, which applied to textile mills of all kinds except silk, marked the beginnings of the new phase in factory legislation as the appointment of four government factory inspectors secured a great advance in administrative efficiency. These inspectors were to make circuits of the manufacturing districts in their areas and were given powers to enter any factory where

¹ Hutchins and Harrison, *A History of Factory Legislation*, p. 16.

children were employed, to call witnesses and to summon any person to give evidence.

By an Act of 1844 women were included in the class of protected persons, provisions were included as to safety and the twelve-hour day was deemed to begin as soon as any protected person began work. In 1847 the hours of all protected persons were limited to ten, and thus there was secured by the workers a principle for which they had struggled with great determination and in which they had been assisted by humanitarian leaders like Michael Thomas Sadler, Richard Oastler and Anthony Ashley Cooper (later Lord Ashley, afterwards Earl of Shaftesbury).

The Act of 1844 is notable in that it marks the first step taken by the State to provide medical inspection of workers. 'Certifying surgeons' were appointed, though their duties were limited to the task of certifying the ages of children commencing factory work. This was necessary since birth certification had only become obligatory in 1837. The 1844 Act also introduced the first safety provisions, though they were of a very rudimentary kind, and it inaugurated the half-time system for children though it was retrograde in that it reduced the minimum age from 9 to 8. Till 1874 it was legal to employ young children of 8, but thereafter the minimum age was gradually raised till in 1901 it was fixed at 12, and in 1920 at 14.

The main developments under subsequent factory acts were the various regulations imposed on factory occupiers where the processes were dangerous to health and incidentally this meant an extension of State control to adult male workers who previously had been expected to look after themselves. Eventually the various acts were codified and consolidated in the Factory and

Workshop Act, 1901. This Act laid down general requirements for the health and safety of workpeople in factories and workshops, and in addition gave powers to make orders or regulations for processes which gave rise to special dangers. The general provisions relating to health were directed to securing minimum standards of temperature, ventilation, cleanliness and sanitation, and the prevention of overcrowding. The safety provisions required the safeguarding of dangerous machinery and appliances and the provision of adequate means of escape in case of fire. The permissible hours of employment of women and young persons were regulated and for them night employment with certain exceptions for boys, was prohibited. Further, young persons might not be employed without a certificate of fitness from a certifying factory surgeon appointed by the Home Office.

The 1901 Factory and Workshop Act remained the essential basic feature of factory legislation till 1937, and no radical alterations were effected, though certain extensions of the principles laid down in the Act were introduced by special acts, welfare orders, administrative action and by regulations made under Section 79 of the Act. Thus the Employment of Women, Young Persons and Children Act, 1920, increased the restrictions on the employment of persons in these categories, and gave effect to certain international conventions. The Police, Factories, etc. (Miscellaneous Provisions) Act, 1916, (Section 7,) gave power to the Home Secretary to make Welfare Orders regarding matters not generally covered by the general provisions of the Factory Acts, where conditions and circumstances of employment and the nature of the processes carried on appeared to require it. In this way backward employers were compelled to provide amenities which enlightened employers had

voluntarily adopted. The matters prescribed under such Orders might include the supply of drinking water, arrangements for preparing or heating or taking meals, ambulance and first-aid arrangements, supply of protective clothing, supply and use of seats in workrooms, washing facilities, rest-rooms, arrangements for supervision or cloakrooms.

The Factories Act, 1937, was long awaited as practically every Government since the Great War had announced its intention of consolidating the law relating to factories anew. The Act, however, was not merely a consolidating Act, but also an important amending Act. The general provisions which incorporate the main features of previous legislation are directed towards securing suitable standards of cleanliness, temperature, ventilation and sanitation, and preventing overcrowding. Dangerous machinery has to be fenced and provisions must be made for adequate means of escape in case of fire.

Several of the changes introduced were in the direction of greater simplicity. Thus, the distinction between 'textile' and 'non-textile' factories was abolished, whereas formerly there were practically two distinct codes. The term 'workshop' was abolished and workshops were included under the term 'factory', which now covers any premises where persons are employed in manual labour in manufacture, or other industrial processes, including building, shipyards, engineering works, and even garages (except where these are used only for cleaning and running repairs).

Another change in nomenclature was that the term 'Regulations' took the place of 'Special Orders' under the 1901 Act, and the term 'Special Regulations' was substituted for the procedure known previously as 'Regulations'.

Probably the most important developments in the new Act were those that relate to safety and accident prevention. Provisions regarding the fencing of machinery became more stringent, and for the first time a liability was imposed on the seller of new machinery. Elaborate precautions were imposed regarding lifting appliances and vessels containing dangerous liquids must be protected. Further requirements related to passages and stairs, escape in case of fire and protection against dangers from fumes or dust.

As regards hours of employment of women and young persons, the Act did away with the distinction between textile and non-textile factories, and laid down 11 hours, taken between 7 a.m. and 8 p.m. as the normal daily period of employment for all factories, with a maximum of 9 hours per day of actual work and 48 per week (subject to overtime under prescribed conditions) with certain modifications where a 5-day week is worked, when the total hours of work per diem may be 10 instead of 9, and the daily period of employment 12 instead of 11.

After a $4\frac{1}{2}$ hours spell of work there must be a break of at least half an hour for meals except that where there is a rest pause of 10 minutes, the spell may last 5 hours.

Welfare provisions have been considerably extended. A supply of drinking water must be maintained in all factories, accommodation must be provided for clothing, arrangements made for drying clothing and washing facilities provided (after 1st July, 1939). Young persons may not be employed in carrying loads likely to cause them physical injury and special regulations may be made under the Act (Section 56) to regulate maximum weights which may be lifted or carried by any person or in any factory; seats must be provided for women

workers. It was made a duty on employers to take measures to prevent the inhalation of dust or fumes, whereas formerly these were only necessary if the factory inspector ordered them. Where practicable, exhaust appliances must be provided as near as possible to the point of origin of the dust or fumes. Factory inspectors may certify any underground rooms as unsuitable for the employment of workers.

Certain duties have been imposed on employees. No employee may wilfully interfere with or misuse anything provided for the health, welfare or safety of employees. They must use every such appliance provided, and they must not wilfully do anything to endanger themselves or others. Presumably the sanction which these will have will be their effect on compensation rights.

In addition, the Home Secretary has power to make 'Regulations' for individual industries of a dangerous or unhealthy character (Section 60) and 'Welfare Regulations' (Section 46) either for a particular factory or for factories of any class or description. These latter may cover matters such as washing facilities, protective clothing, rest-rooms, ambulance and first-aid arrangements, meal arrangements, or arrangements for the supervision of employees.

The former may include control over materials or processes employed, or limitation of hours of work or class of persons employed.

The Development of Voluntary Welfare

In the new factories of the eighteenth century, the owners sometimes went to the extreme of paternalism as regards control over their workers. The Truck System, the close supervision of the moral and social relations of their workers and a dozen other practices which later

grew into the most flagrant of abuses, took their origin from the farm kitchen and the parish church of an earlier day.¹ In Japan to-day a not dissimilar paternalistic control is exerted over workers in the large factories, though it incorporates many modern ideas of welfare. As this phase passed and as the factory system became established, the tendency, apart from a few notable exceptions, was to overlook the importance of the human element in industry and to concentrate on mechanical improvements. The attempts made by early pioneers are of special interest as some of them anticipated many of the features of modern welfare work and of the statutory requirements which are now an important feature of industrial legislation in practically all countries.

One of the earliest of the 'model employers' was Ambrose Crowley, the greatest iron-master of the seventeenth century—whose iron-works in County Durham employed several hundred men and was very well organized. The firm was of the 'vertical' type, as all operations from the making of bar-iron to the manufacture of finished products were carried on. Its organization was complicated by the fact that it was based partly on an 'out-work' system and partly on the factory system. The factory workers were housed in buildings provided by the firm, known as 'The Square', and were under the control of a warden. A doctor was employed by the firm to look after the health of the workers and their families and a schoolmaster was also retained for the free education of the workers' children. Minute regulations were drawn up by Crowley for the conduct of the business and the behaviour of the workmen. In the 'Law Book', as it was called, over one hundred rules were embodied and these included regulations

¹ R. L. Hill, *Toryism and the People*.

prohibiting betting in the Square, 'Clubbing to drink' and cursing and swearing. A mutual insurance fund was introduced to safeguard workers against sickness and poverty, and to this fund both the firm and the workmen contributed. To hear and determine petty disputes that might arise among the workmen, five arbitrators were appointed, consisting of the chaplain and two nominees each of the employer and the workmen. Hours of labour, however, were long, as was then the custom. Work started at 5 a.m. and finished at 8 p.m., with an hour and a half for meals on six days a week.¹

Another pioneer in improving the conditions of factory workers was Robert Owen, who probably more than any one else was responsible for the greater interest subsequently taken in better working conditions.

In 1797, after gaining experience as a cotton manufacturer in Manchester, he became the part-owner of the New Lanark Mill on the Falls of Clyde. Previously pauper children had been employed from the age of six and worked from 6 a.m. to 7 p.m. The grown-up workers were of a very undesirable type, including drunkards and even criminals, as at that period respectable workpeople would not enter the factories. In all, about 700 children and 1,000 adults were employed.

Owen completely revolutionized the conditions of work, and his factory became celebrated throughout Europe. He took no more children from the workhouse and allowed none under the age of ten to work in the factory. The normal working day was reduced to ten and a half hours (or twelve hours including meal times). A school-room was provided and teachers were employed to instruct the workers' children. There was drill for the

¹ For a full account of Ambrose Crowley's achievements, see E. Lipson, *The Economic History of England*, Vol. II, pp. 178-183.

boys, domestic economy for the girls, and singing and dancing for both. He also instituted infants' schools, which were the first of their kind in the United Kingdom. Education was continued up to twelve years of age and a charge of three shillings per annum was paid by the parents, but the rest of the cost, amounting to £700 per annum, was met by Owen.

In order to eliminate thefts in the factory, a 'silent monitor' was placed before each worker. This was a wooden cube, one side black, recording a bad character for the previous week, another blue, another yellow, and the fourth side white, denoting exemplary character. Night watchmen paraded the streets to take the names of drunkards and three offences meant dismissal. An elected committee, nicknamed 'the bug hunters', inspected the workers' houses to see that they were kept clean. A 'Support Fund' was inaugurated for the help of the sick, the aged and those injured by accident. Voluntary thrift was encouraged and a common store was opened which sold good quality articles below ordinary retail prices. An Institute was formed in the works by Owen in 1809 in which lectures, dances and other forms of recreation were provided for the workers, and in which a library was housed.

Owen was able to run his works at a profit and his welfare schemes were described as 'philanthropy at a minimum of five per cent profit', but this, though intended as a jibe by his detractors, was perhaps the most important feature of his experiment, as it proved that his methods were commercially possible.

Another pioneer in the textile industry was Samuel Greg, who, when he took over the Lower House Mill at Bollington in 1832, built a model village for more than 300 workpeople and their dependents. He also provided

playing-fields, formed evening classes and a library, and erected a large building as a Sunday school. For many years he devoted much time to the education and welfare of the workers in his community, until he became disheartened by a strike in 1846, and retiring from business, discontinued his welfare activities.¹

On the Continent, there were also a number of noteworthy pioneers who introduced improved working conditions and welfare activities in the early phases of industrialization, though in general these were later than the work of the British pioneers, since on the Continent the factory system did not become general until well on in the nineteenth century. Thus Philibert Vrau, of Lille (born 1829), planned model dwellings for his workers, encouraged beneficial associations among the workmen of Lille and insisted on the right of all workers to a full living wage. He was a devout Catholic and was called by Pope Benedict XV 'the frock-coat saint'.

Welfare work in its present form is the result of the movement towards the amelioration of working conditions which began in the early nineteenth century and gathered impetus as factory legislation developed. Statutory regulations were gradually extended and thus a minimum standard was built up protecting the workers against injury to health and limb.

Before the Great War, a number of employers carried on voluntary welfare work with marked success, and provided working amenities considerably above the minimum standard required by the law. In particular firms of the family type, such as Messrs. Cadbury, Cash, Colman, Fry, Mather & Platt, Reckitt, Renold,

¹ See T. S. Ashton, *Economic and Social Investigations in Manchester 1833-1933*, p. 7.

and Rowntree, began about the beginning of the present century to lay stress on the physical welfare and recreation of their workers and provided facilities for organized games, swimming, or gymnastics, and other amenities. In Scotland, such well-known firms as Messrs. Coats, of Paisley, Messrs. Denny, of Dumbarton, paper manufacturers such as Cowan & Craig, and the Edinburgh publishers, Messrs. Chambers and Messrs. Nelson, were among the pioneers in providing better conditions in regard to sanitary accommodation, canteens, libraries, play-rooms, etc., but in general, Scotland lagged rather behind English standards.¹

During the war years, welfare work came to be recognized as an integral part of efficient industrial management, largely owing to the special conditions of employment to which war gave rise. 'It is one of the beneficial legacies of war-time experience that there is a more widespread and intelligent appreciation of the social and economic importance of factors which diminish fatigue and enhance the fitness of the worker and improve the amenities of the workplace.'²

During the war years welfare work was stimulated by the fact that a large number of women and young persons were employed in industry. A further factor was a financial one, since firms were allowed to deduct welfare expenses from profits liable to Excess Profits Duty. After the war, the extension of welfare activities received a partial check, owing to industrial depression and a reduction in the number of women employed in industry.

The importance of welfare work in industry lies in the fact that good working conditions increase industrial

¹ W. H. Marwick, 'Paternalism in Victorian Scotland,' *Juridical Review*, March, 1935.

² Balfour Committee on Industry and Trade. *Survey of Industrial Relations*, p. 26 (1926).

efficiency and the need for welfare work becomes more urgent as industry becomes more mechanized, standardized and repetitive. Inquiries instituted by the Home Office and the Industrial Welfare Society among firms that have adopted welfare schemes revealed that practically all the firms were convinced of the value of welfare work. Though it is impossible to give it a cash value, the advantages claimed for it were increased efficiency, better time-keeping, greater contentment and a reduction in absenteeism and labour turnover. Care for the well-being of the workpeople is now coming to be recognized as an essential function of management.

Employers find that good working conditions enable them to secure the services of the best type of worker and, indeed, it is found that employees are often willing to travel a considerable distance to a factory where good working conditions are provided. Nevertheless, it must be admitted that good working conditions are not alone the solution of problems of industrial relations. There is a real danger of organized welfare work becoming impersonal, and if this happens workers very soon come to assess such schemes at their true value, namely, a method of increasing efficiency for the benefit of the firm and not a system to humanize industrial relations within the factory. This is emphasized by the fact that in some small firms where practically all the provisions of the Factory Acts are broken, and where the actual physical conditions of work are bad, there is a strong corporate feeling and community of interest, simply because of the personal interest taken by the owner in each individual alongside of whom he works himself. To achieve something of this personal relationship in industry, many large firms now employ welfare superintendents who attempt to form intimate and friendly

contacts with the workers, and also take charge of the organization of the various welfare activities.

Voluntary Welfare To-day

The nature and extent of the amenities provided in addition to those compulsorily required, will be found to vary in different factories according to the special needs of the locality or industry, or according to the views of the employer or the workpeople.

The most important welfare schemes are those connected with the engineering, shipbuilding, iron and steel trades and the food industries. In certain firms in the food industry, welfare work has been carried to its greatest extent, and in certain of them it might almost be said to be traditional.

Welfare equipment within the factory includes the provision of canteens, mess-rooms, cloak-rooms, rest-rooms, baths, lavatories and recreation-rooms, and many firms nowadays take such matters into consideration when planning new factories, while even small firms are attempting to do what they can along these lines within the limits of their resources. In several instances, firms which were too small to provide a canteen individually have combined to do so jointly. Welfare work has also been extended outside the factory to include the provision of houses, allotments, playing fields, recreational facilities and the like. It is the arrangements within the factory, however, that are the most important to the workers, and no amount of amenities provided outside working hours can really compensate for low wages or bad working conditions within the factory.

Generally considered, welfare work is even more important in factories situated in the country than for those located in a town. Where a factory or other

industrial plant is opened in an area new to industry, e.g. as was recently the case at Corby, in Northamptonshire, the firm may have to provide houses, entertainments and other amenities in addition to the more usual welfare activities. An outstanding example is provided by the Bata factory at Zlin.¹ This was originally a small town of but 4,000 inhabitants situated in an obscure valley leading from the Moravian Uplands to the Carpathians. The district was entirely agricultural; there were no factories and its inhabitants had no industrial traditions. By 1930, Bata had transformed it into a town of some 30,000 persons, of whom 13,000 were employed in his own undertakings. He had to provide not only houses and hostels for his thousands of workers, but also shops, cinemas, brickfields, sports grounds, soup kitchens, restaurants and schools. He laid on a supply of pure water, built a magnificent hospital, provided technical and commercial education, arranged for a supply of milk and even endowed a Chair of Industrial Hygiene at the University of Brno, so that he might be informed of the most recent discoveries in that field.

He set up an autonomous social department to take charge of the various welfare activities, including the housing programme, the general store, the medical consulting-rooms, and the restaurant. For the workers' children he provided a nursery school, two kindergartens, one of which was open to all children in the town, and soup kitchens open in the winter months so that children attending school need not return home through the snow at midday. Bata's housing scheme provides accommodation for 1,000 in the girls' hostel, 1,500 in the youths' hostel and 1,364 families and 3,222 unmarried persons

¹ Founded by Thomas Bata (born 1876, killed in an aeroplane accident, 1932).

in the workers' houses. His model hospital is an outstanding achievement, and consists of a central building containing operating theatres and administrative offices, while around it are grouped separate one-storey wards. The technical installation reaches the highest standards, several rooms being fitted with ultra-violet ray apparatus, and the operating theatres are admirably equipped and lighted. Administrative costs are reduced to the minimum by requiring the nurses to keep the accounts of each room, and the administrative staff is thus reduced to a steward and a clerk.

The store consists of a number of shops occupying the ground floor of a standard building near the factory entrance, and supplies practically every requirement at cost price. In order to keep down prices, Bata bought farms to supply milk, butter, eggs, poultry and meat. The restaurant is located in the first and second storeys of the same building. Organized on the lines of an American 'Cafeteria', it can serve 6,000 meals in an hour.

Canteens

The canteen is generally the centre of welfare activities since in addition to its primary function of supplying hot, wholesome food at cost price, it can be utilized for concerts and dances, and as a meeting-place for other indoor social activities, such as debating and literary societies, dramatic clubs, community singing and the like. The canteen should be something more than a mere eating place. That is it should be comfortable and attractive, bright and cheerful, so that workers may obtain a complete change and rest during their dinner hour. Flowers, plants, pictures and curtains can do much to brighten up a canteen. Tables should be kept scrupulously clean,

and individual chairs should be provided rather than benches.

As regards the finance of the canteen, it is necessary to decide what proportion of the total cost should be met out of the gross receipts from the food sold. In many canteens, the prices charged are sufficient to defray the cost of the food itself and that for cooking and service, including wages and salaries of the canteen staff, the expense of cleaning, and cost of breakages. The remaining expenses, such as those involved in providing and maintaining the building, electricity, gas or steam used for heating, cooking or lighting, are defrayed by the firm.

A particularly well-organized canteen run on these lines is that at Messrs. Rowntree's Cocoa Works in York. There is also a restaurant, where the charges are somewhat higher, with arrangements somewhat similar to those of a good café. This is used by the higher officials and office staff, but it is also open to the rank and file workers. In the canteen, the majority purchase their meals *a la carte*. Some buy a few extras to supplement what they bring from home, while others bring all their food, buying only a cup of tea. Workers can have their own food heated at a charge of one half-penny. The entire arrangements of the canteen are under the control of a manageress, who is assisted by an advisory committee appointed by the workers. The committee examines all accounts and is consulted as to the kind of food to be provided.

'The question has been considered whether the whole management of the canteen could with advantage be placed in the hands of the workers. This is done in some factories, but the plan has not always succeeded and probably the best canteens are those run by the

ordinary administrative staff, with the assistance of a committee of workers.¹

Another example of a well-organized canteen and mess-room is that of Messrs. Mather & Platt, Ltd., at their Park Works, Manchester, where accommodation is provided for over 1,400 men. Workers can either bring their own food, which is warmed up for them free of cost, or can have a hot dinner consisting of meat, two vegetables, and a milk or boiled pudding at a cost of sevenpence. Each man is allotted a place at the tables, and when he comes in at the lunch hour, he finds his meal waiting for him, whether he has brought his own food or purchased it from the central kitchen. A separate dining-room is provided for 200 women and girls employed in the works. Hot meals are also served to night workers, thereby removing one of the great disadvantages of night work.

The central kitchen which supplies the meals is most carefully designed to save labour in its working, and to serve a large number of meals almost simultaneously. It will be appreciated that the conditions in a work's kitchen are very different from those of a restaurant or hotel where the demand extends over two hours or more. Consequently a more generous provision of cooking equipment has to be provided.

In addition to the Park Works there is a boiler and foundry shop in Salford, four miles away, and though a mess-room has been provided there as long ago as 1878 the accommodation was not suitable for the installation of a modern kitchen. The problem has been ingeniously solved by cooking all meals at the central kitchen in the Park Works and sending them to Salford in bulk by motor-van, in heat-retaining containers. A small laundry

¹ B. S. Rowntree, *The Human Factor in Business*, p. 40.

operated on the most modern lines is also provided for washing lavatory and kitchen towels and other accessories.

The dining-rooms, kitchen and laundry are administered by a sub-committee of the works committee, and the charge made for dinners is expected to cover the cost of the provisions, the labour required for the preparation of the food and the replacement of breakages. The cost of rent, light, and heat is met by the firm. There is also a staff canteen having electrically-heated ovens, grill, boiling tables, and hot cupboards, while steam and hot water are laid on for washing purposes. The service and equipment are of restaurant standard, and this canteen is managed by a committee elected by the staff.

In the Montague Burton works at Leeds, which employ 8,000 workers, there is a canteen able to accommodate the full complement of workers, and a meal consisting of soup, meat, potatoes and vegetables, sweet and coffee can be obtained for eightpence.

Mess-rooms

The provision of a mess-room need not be an expensive or elaborate undertaking. Existing rooms or buildings can be adapted to the purpose, since all that is essential is a room suitably furnished with sufficient tables and seats, and provided with adequate means of cooking or heating food and boiling water. The room must be sufficiently large to prevent overcrowding, and should be pleasant in appearance because a dark, stuffy room with a stale smell of food clinging to it cannot be anything but a failure. Mess-rooms are particularly desirable in those industries where men are working in shifts throughout the day and night, for example, motor-bus operators and railway workers. The partaking of meals constitutes a real problem in this type of industry. In

Manchester, the Corporation Transport Department has attempted to overcome the difficulties by providing a mobile canteen in the form of a converted motor-bus. In the case of long distance haulage work or motor-coach operation, a possible solution would be the provision of facilities through the co-operation of several firms at various nodal points. As things are, lorry drivers have to rely on roadside cafés to obtain rest and refreshment. Most heavy road transport is done by night, and this raises problems for the lorry driver of sleep, rest and meals. In an article contributed to *The Times* of 17th August, 1936, entitled 'England on the Road', there will be found an interesting account of the all-night cafés which have arisen to meet the needs of the lorry drivers, and of which there are many hundreds to be found up and down the important trunk roads. 'They have a life of their own, a coming and going of "regulars", a steady trade that only drops off on Saturday and Sunday, when the pleasure traffic, by contrast, reaches its height; and especially at nodal points, where drivers change over when their lawful shift is supposedly completed, they acquire much of the character of a club. Messages are taken and given; arguments two days old are resumed over the cups of black, biting tea; gossip goes round about breakdowns or bosses, or a new way of squaring the log-sheet. As an institution the all-night café is still rudimentary. Its exterior generally has an improvised rustic air, rather like the store in the "Western" films. Its name is usually intimate: "Joe's", or "Pete's" or "Jack's".'

Mess-rooms can often be improved by providing tea, coffee and other hot drinks, and this can be done simply and inexpensively without developing the mess-room into a fully equipped canteen. It is desirable, however,

where possible, to provide a canteen, and this is emphasized in a useful welfare pamphlet on the subject issued by the Home Office.

'Whether it is desirable to go beyond this and to provide a canteen as well as a mess-room, i.e. provide freshly cooked meals as well as a room in which to take meals, is a question which an occupier should always carefully consider. The arguments in favour of the canteen are that a hot meal freshly cooked is better—more appetizing and more easily digested—than cold or warmed-up food, and that the food can be supplied more cheaply. A good hot meal taken at the factory conduces to much better work, particularly during cold weather, and it is sometimes found not much more trouble to cook a meal than to heat up miscellaneous dishes and basins of food brought by individual workers. A canteen is especially desirable if many of the workers live at a distance from the factory and are obliged to take two meals a day there.'¹

The need for providing mess-rooms and canteens is now fairly widely recognized, and employers have come to appreciate the importance of adequate accommodation of this kind. Not only does a good canteen or mess-room contribute materially to the comfort and health of the workers; it also contributes in no small degree to the efficiency of their work.

Recreational Facilities

The provision of adequate opportunities for recreation is very desirable, and the only question that arises is whether an employer should take responsibility for their provision or should leave it to others. The large employer, if many of his workpeople live near the factory,

¹ *Mess-rooms and Canteens at small Factories and Workshops* (Welfare Pamphlet, No. 2., H.M.S.O.).

should at least satisfy himself that adequate facilities are available. If they are not, he may provide facilities himself or encourage communal effort in this direction by his influence and financial help. Where local authorities or other bodies are seeking to provide playing-fields, sports clubs, etc., these efforts may be less successful if large employers refuse to co-operate, though, on the other hand, employers may feel that it is easier and quicker to cater for their own workpeople. Further, they may consider that the provision of facilities of their own would tend to increase *esprit de corps* among their employees.

Furthermore it hardly needs to be emphasized that adequate and suitable recreation has an important bearing on physical health and contentment. In many occupations physical health is of primary importance in connexion with works or public safety, and with efficient performance of duties. Many factory and other jobs, moreover, necessitate standing for long periods or sitting at a bench for hours on end, where there is little opportunity for change of posture or for exercising all the muscles.

Probably the most popular form of recreational facilities is the provision of allotments, especially among the older workers. These are, moreover, generally fairly inexpensive to provide, and they afford a very healthy form of recreation during leisure hours. Playing-fields, sports clubs, tennis courts and bowling greens are also highly appreciated and frequently interworks league competitions can be arranged with advantage. Dances or whist drives held in the canteen are other forms of social activity which appeal to the workers.

The recreational facilities provided by some firms are very extensive; a notable example being those of Messrs.

Montague Burton, which include football, cricket, tennis, lacrosse, billiards and swimming, besides dramatic societies, and a branch of the League of Nations Union. Of an even wider range are the activities of the 'Social Union' of the Renold and Coventry Chain Co., Ltd., which include allotments, angling, badminton, bowls, choral society, cross-country running, cricket, cycling, dancing classes, dramatic society, educational society, football, fencing, gymnastics, golf, hockey, holiday fund, Hospital Sunday fund, indoor games, National Savings Society, orchestral society, photographic society, radio society, rambling, Red Cross society, swimming, sports, table tennis and tennis.

Mr. Seebohm Rowntree, in discussing the introduction of recreational facilities, gives the following advice to employers: (1) Never seek to impose a club or society upon the workers. The idea may be suggested to a few active persons who can discuss it among their mates, and they can be informed that if they find the club is wanted, the management will be ready to help. (2) Never become responsible for making good a financial deficit on the working of a club. Discuss in advance what contribution is reasonable, if any, and then place the whole of the remaining liabilities on the members.

Medical facilities

Individual efficiency of workers depends naturally very largely on the state of their health, and recognizing this, many large industrial firms now provide a special medical service for their employees, including medical advice and free treatment. Dental clinics are frequently provided as a necessary accessory to medical advice and treatment, and the provision of foot clinics is also valuable in those industries where it is found

that many workers suffer from foot trouble owing to the amount of standing involved in their jobs.

Mr. Hyde, Director of the Industrial Welfare Society, has calculated that in industry as a whole fifty-eight per cent of the total loss through sickness absence among employees is due to colds, influenza and tonsilitis. He emphasizes that the employers' problem was the prevention of disease rather than remedial measures.

Among firms that provide extensive medical facilities may be mentioned Messrs. Rowntree and Messrs. Montague Burton, Ltd.; this latter firm, for example, provides a works doctor, dentist and chiropodist and also has introduced equipment for sun-ray treatment. Mr. Seeböhm Rowntree, quoting from the report of an administrative officer in his factory, claims that the establishment of a medical department has prevented much lost time, and dislocation of work, has increased output and reduced compensation expenses. It has also served a very useful purpose in advising the management when the effects of certain work are harmful to any special organ or to the general health of the workers.

Factory Housing

The provision of houses for employees has long been a regular feature of agricultural practice. Cottages have been provided for married farm workers, while in Scotland the unmarried farm-labourers are housed in a 'bothy' or boarding-house provided by the farmer. When the early factories were built, the agricultural tradition was strongly evident in their organization, and since many of these factories were built in out-of-the-way places where water-power was available, it was practically essential that the owner should provide housing for his workers. Generally, also, the early

cotton mills had each their 'Apprentice House' for housing the children they employed.

To-day, when works are opened in new industrial areas, employers may still find it necessary to build houses for the workers. Likewise, where special labour is employed, housing facilities may have to be provided, e.g. in the South African gold-mines, native labour recruited for a period of years from the 'reservations' is housed in special compounds, while in Japan the young female workers from the agricultural areas are provided with dormitories by the large mills, who devote special attention to their welfare. In India the cotton mills of Bombay and Ahmadabad, however, make no attempt to provide houses for their workers—mainly Hindus from the agricultural villages where their social organization is that of the joint-family. In these towns, housing conditions of the workers are very unsatisfactory.

In this country the coal-mining industry affords an example where it has generally been essential for the employer to provide housing, though nowadays the local authorities may build the houses required. The 'tied house' is still very prevalent in parts of Scotland, as the mining areas are often remote from centres of population. Frequently these miner's rows were jerry-built and ill-equipped, but this was partly the result of the short leases granted by ground landlords, often of only nineteen to thirty-one years' duration, after which the property reverted to the landlord. They were, therefore, designed to last only for that term, though in practice they have frequently been retained and utilized for a far larger term of years. Where the landlord retained a direct interest in the mines, as at Dalkeith, Newbattle and Troon, a better type of house was constructed. In other industries a similar practice was

also followed in Scotland. In the iron industry the Bairds provided houses at Coatbridge; in the shale industry Dr. James Young built houses at Addiewell; in the cotton industry Dale and Owen at New Lanark, and Messrs. Monteith at Low Blantyre, while a model village was built at Deanstown-on-Teith, near Doune.¹ The modern tendency, however, is definitely away from the provision of houses by industrial firms. It is expensive to employers and workers do not like it. Housing for factory workers is now generally regarded as a duty of the local authority, not of industry.

In the U.S.A. many employers, particularly those whose factories are situated in isolated districts, have found it necessary to provide houses for their employees. The recent tendency, however, has been not to provide houses, except in the textile mill villages of the South.

The Industrial Welfare Society

The voluntary welfare movement has been considerably assisted by the foundation of the Industrial Welfare Society. In 1916, the Minister of Munitions set up a welfare department under the direction of Mr. B. Seebohm Rowntree, to advise employers and managers on questions of housing, transport and working conditions among munition workers. In 1918, this led to the formation of the Industrial Welfare Society, with the Duke of York as President and Mr. Hyde—who had assisted Mr. Rowntree in the Welfare Department—as Director. The employers who sponsored the new society believed that the welfare work undertaken during the war by the Ministry of Munitions should be continued on a voluntary basis and should be guided by industry

¹ W. H. Marwick, 'Paternalism in Victorian Scotland,' *Juridical Review*, March, 1935, pp. 45-47.

rather than by a State department. The Society, which has a membership of 1,400 firms, mainly large concerns, aims at focusing attention upon and developing various industrial, educational and recreational activities. It supplies its members with information about the different phases of welfare work and advises employers as to the most suitable forms of welfare work for their particular factory. It advocates the appointment in each firm of a responsible person to take charge of all personnel work.

A monthly publication is issued entitled *Industrial Welfare and Personnel Management*, in which articles on welfare work of general interest to managers are a regular feature, while from time to time, more detailed studies are published giving information about specific welfare schemes, including their cost, methods of financing and the regulations which experience has shown give good results.

Each year since 1920, the Society has organized an annual conference on welfare work, which is attended by representatives of from 100 to 200 firms.

The Institute of Labour Management

Another important organization founded in 1913 as the Welfare Workers' Association, has since 1931 broadened the scope of its activities and changed its title to that of the Institute of Labour Management. This institute aims at bringing together those engaged in a professional capacity in labour and staff management. Other persons interested in its work are admitted as associate members. Its objects are to pool the experience of its members, to formulate the most effective methods of dealing with problems of labour management and to maintain high standards of entry to the profession. It publishes a monthly journal entitled

Labour Management which contains valuable articles, reviews and notes.

Welfare Work in the United States

Welfare Work is now usually designated 'Employees' Service' in the U.S.A., as the older title was unpopular in certain quarters and had a rather paternalistic flavour. The usual type of work undertaken include shop bands, glee clubs, dramatic societies, athletic organizations, field days, dances, clubs and canteens; these last being usually termed lunch-rooms or restaurants.

The shop bands organized among the workmen serve a useful purpose in providing music for dances and other social affairs and they have the additional advantage in the U.S.A. of providing a method of self-expression in which foreign workers have a chance to distinguish themselves. In most firms the management contributes towards the support of the band either in cash or by supplying instruments or uniforms, or by paying the salary of a conductor or leader.

The glee clubs are also very popular, since workers of many nationalities, e.g. German, Welsh or Austrian, find it natural to seek recreation in song. In field-day celebrations various athletic events are generally combined with a picnic and they are held to be especially valuable in promoting good relationships between management and employees as they are attended by both workers and executives. As one American writer puts it: 'Executive dignity may get somewhat mussed up in the process but it is worth some sacrifice of dignity to have rank and file of workmen see that the president of the company can eat watermelon without a fork and that the general manager can throw the president of the local union in a wrestling match.'¹

¹ *Cost and Production Handbook*, p. 1387.

For lunch-rooms and restaurants the cafeteria type is generally favoured on the grounds that it is cheaper to operate and that it enables a quicker service to be given. In some works cafeterias, a moving band conveyor is employed on which the worker places his tray and as he has to keep up with the conveyor, this discourages over-long deliberation in choosing his food.

Industrial clubhouses have been erected in various mining and lumber camps, in the oil fields and at railroad centres. The cost of providing the clubhouse is usually met by the employer, though sometimes part of the cost is borne by the workers, or even the general public. The management is sometimes retained by the employer, sometimes it is in the hands of the employees; sometimes it is managed by an outside body, such as the Industrial Y.M.C.A., and in yet other cases it is jointly managed by two or more of these agencies.

To conclude, there can be no harmony in industrial relations without good will on both sides. If that be not present, no amount of organized machinery, either national, local or otherwise will prevent continual friction. Fair wages, just treatment and good conditions must be provided by employers, while workers on their part must give a fair and just return in good work, attention to duty and service to the community.

CHAPTER VII

INDUSTRIAL DISEASES

IT has long been recognized that workers engaged in certain occupations are peculiarly liable to contract what are called industrial or occupational diseases. Adam Smith, for example, was well aware of this fact and pointed out that 'almost every class of artificers is subject to some peculiar infirmity occasioned by excessive application to their peculiar species of work'.¹ The pioneer in the study of industrial medicine was Bernardino Ramazzini² whose celebrated work entitled *De Morbis Artificium Diatriba* (Dissertation on the Diseases of Craftsmen) published in 1700 was the first comprehensive study of the whole field. He emphasized the importance of occupation as a cause of ill health and disease asserting *Medici munus plebeios curantis est interrogare quas artes exerceant* (the first duty of a doctor attending the common people is to inquire what trades they practice). His investigations into occupational diseases were extraordinarily thorough, and he sought his data from every known country and included in his survey practically all the trades and occupations of his day—barbers, bakers, chemists, dyers, flax workers, gilders, glass workers, grinders, metalliferous workers, millers, nurses, painters,

¹ *An Enquiry into the Nature and Causes of the Wealth of Nations.* Book I, Ch. 8. (Published 1776.)

² A learned Italian physician, Professor of Medicine at the University of Modena and later at the University of Padua, born 1633, died 1714.

porters, potters, sailors, salt workers, scholars, sextons, silk workers, soap workers, stonemasons, surgeons and watchmakers.

Ramazzini was surprisingly modern in many of his conclusions, and he recognized that the main causes of occupational diseases are *first* the injurious nature of the products handled, and *second* the unnatural postures and violent movements demanded by the work. He emphasized the dangers of inadequate ventilation and unsuitable temperatures. He recommended that workers engaged in dusty trades should be accommodated in spacious rooms, and should work with their backs to a draught. They should wash their faces frequently, and rinse their mouths from time to time with acidulated water, while immediately they became threatened with lung trouble they should change their occupation. Faulty posture, he held, was a cause of ill health in many trades, and as ameliorative measures he advocated exercise, change of posture and rest intervals where the work was of prolonged duration.

In modern times, disease in industry, just as it was in Ramazzini's time, may be caused by the physical conditions under which the work is carried out (e.g. high temperature, excessive humidity or unsuitable atmospheric pressure), or by the materials handled. To-day industrial workers have become highly specialized, and processes are continually being introduced which involve the use of materials injurious to health. In the first category, namely, diseases due to the physical conditions of the work, there may be instanced nystagmus among coal-miners, compressed air illness (Caisson Disease), rheumatism among agricultural workers, or cataract among glass workers or iron workers. Strained posture or unduly prolonged use of particular muscles may also

lead to trouble as for example, cramp among clerks, telegraphists or textile twisters.

It is more common to experience trouble from the materials handled. In the past, metals such as lead, mercury, arsenic or phosphorus were largely responsible for cases of industrial poisoning, and a study of the history of the industries concerned with these substances provides good examples of successful methods of prevention. The handling of wool, hair, bristles, hides or skin may cause anthrax, while bakers, french polishers, dyers and calico printers may contract dermatitis.

The simplest method of preventing an industrial disease is to prohibit the use of the toxic substance giving rise to it. This depends on finding an efficient substitute. A classic example is that of the match industry where white phosphorus, which used to give rise to very serious cases of poisoning, has been replaced by the use of phosphorus sesquisulphide. Not only is the use of white phosphorus in the manufacture of matches prohibited, but the sale or importation of matches manufactured by the use of white phosphorus is forbidden in this country. Similarly, mercury poisoning in the mirror industry was completely done away with by the introduction of the more modern silver process.

It is rarely possible completely to dispense with a material, and it may therefore be necessary to find better methods of handling the dangerous substances. For instance, in the prevention of lead poisoning much has been done in the pottery industry by the introduction of low solubility glazes. In these glazes the lead is combined with a siliceous material, and the solubility of the resultant compound is much less than the raw lead previously used. Similarly, in the rubber industry the use of raw litharge in each mix gave rise to a considerable

amount of dangerous dust. This has been prevented by mixing ninety per cent of litharge with ten per cent of rubber, and so producing a 'mother batch'. This material which is no longer dusty may then be added to each mix without giving rise to trouble.

In most processes, however, even expedients of this type are not possible, and the prevention of poisoning must depend on protecting the worker from absorbing dangerous quantities of poison. In devising these methods it is essential to ascertain the portal of entry. The poison may enter the body by way of the mouth, by way of the lungs (by inhalation), or by way of the skin. Probably the mouth is of less importance than is generally thought. Inhalation, on the other hand, is the most usual and the most important mode of entry; the inorganic lead salts, for instance, are very largely absorbed by this route. Certain poisons such as nicotine, aniline and lead tetraethyl enter by the skin. Rules and regulations controlling the various trades must, therefore, keep these facts in view. Since the lungs are of such great importance every effort must be made to suppress dust and fume, and prevent their inhalation by the worker. Numerous methods are employed with this object in view, the most important of which is that of exhaust ventilation.

In another important group of diseases caused by the inhalation of dust, the ill-effects are not general, as in lead poisoning, but are confined to the lungs themselves, e.g. silicosis and asbestosis. Silicosis, which under varied names such as 'stonemason's phthisis', 'grinder's rot', 'potter's asthma' or 'miner's phthisis' has long been recognized as a trade disease, is caused by the inhalation of free silica. It is liable, therefore, to be contracted by workers in siliceous rock, certain miners, stonemasons, workers in flint or metal-grinders. It results from the

action of minute particles of free silica dust, which, when inhaled, enter the deepest recesses of the lung, and there induce a slow inflammatory reaction which eventually destroys the air cells of the lungs. This disease may take many years to make itself felt, and it is particularly insidious because the inhalation of the dust does not irritate the nose or throat, and has no immediate effects, but once it has developed, nothing can be done to cure it. Much of the disability seen in this disease arises from associated tuberculous infection, to which, for some reason, the inhalation of silica predisposes the worker. In the West Wales anthracite collieries, milk-bars have been established on the advice of specialists who hold that the drinking of milk has a protective value.

Asbestosis is a disease of a similar type caused by the inhalation of fine spicules of asbestos. This slowly produces a hardening of the lungs and a loss of normal elasticity, and it, too, brings about early death.

Glass worker's and iron worker's cataract is an example of a disease slow in developing since this malady of the eyes may take from ten to twenty years to produce incapacity. Miner's nystagmus, which chiefly affects hewers who work at the coal-face, is also of slow growth, and may take from ten to twenty-five years to develop. It is believed to be induced mainly by the lack of sufficient illumination in mines since practically all the light, which is often very inadequate in itself, that falls on the coal's surface is absorbed.

These diseases illustrate an important feature of industrial diseases, namely, certain of them are extremely slow to make themselves felt, and it is unusual, for example, for silicosis to manifest itself in less than some ten years of work; other diseases which show a similar characteristic are to be found in the industrial cancers. Here

a number of years of exposure are usually necessary. In some cases, moreover, it is not necessary for the exposure to be continuous. For instance, a mule-spinner may work for seven years as a spinner, and fifteen years after leaving the mill, working meantime in an entirely different occupation, he may develop a mule spinner's cancer.

The industrial cancers are an important group of diseases which are now receiving a considerable amount of attention. The most common form of cancer is that of the skin, as seen in the mule-spinner, the chimneysweep and the tar worker. Recent research has demonstrated that certain lubricating oils used in the spinning mills contain a cancer-producing element, and the use of these oils will be followed by a certain percentage of cases of cancer. It is now possible, however, to treat oils in such a way that their cancer-producing property is destroyed, and it is also possible to forecast from an oil's physical properties its cancer-producing properties. Many of the spinning mills have taken advantage of this discovery, and are now using harmless oil. Unfortunately, this is not by any means general, and certain employers still persist in exposing their workers to the risk of cancer.

Other more serious forms of cancer are induced by certain substances, but detailed research is needed to isolate these substances in order that the disease may be eradicated.

It is not always the fatal diseases which are the most troublesome to industry. For instance, dermatitis is responsible for an enormous amount of lost time, and for a great deal of disability and unhappiness, although it is not dangerous to life. Dermatitis is an inflammation of the skin brought about by irritant substances, such as acids, alkalis, various solvents, or sugar, in people who

have sensitive skins, or who have some general susceptibility to this form of trouble. Dermatitis is a disease for which workmen's compensation is paid, but which is not compulsorily notifiable to the Home Office, although voluntary notification is invited.

With the development of science, new substances, particularly new solvents, are continually being discovered and employed commercially. A certain number of these are extremely poisonous and must therefore be handled with the greatest care. These materials have varying effects on the body. Many of them attack the liver. In order that disasters may be prevented, and in order to reduce the risk of disease and of lost time to industry, the closest supervision is necessary when handling any of these materials.

In certain trades medical supervision is compulsory. For instance, in certain of the lead trades, workers have to be examined at weekly or monthly intervals. In other cases medical examination is voluntary and a worker may refuse it if he wishes. Workers who are to be employed on dangerous work should be carefully selected from a medical point of view, and should then be educated in the use of the appliances provided for their safety, and in the danger of the materials they will be expected to handle. This education of the worker is of vital importance. Many employers are apt to disregard it and excuse themselves by saying that they feel that to tell the worker he is handling a dangerous material would be likely to give rise to panic. This attitude is quite untenable. If workers feel that the management is fully alive to the dangers and that adequate precautions are being taken for their safety, there should be no difficulties of this kind.

It is essential that industry should be alive to the

dangers in which it may involve its workers, and that there should be medical men available who can advise on this special branch. At present there are a few such experts engaged as H.M. medical inspectors of factories, or as medical officers by progressive firms, and facilities for the training of employers and of doctors are now provided at London and Birmingham universities.

In controlling many of these diseases it is desirable to discover some objective method of examination which will give early warning of the possibility of any trouble. For instance, in the lead trades it is possible, by means of examination of the blood, to get early warning of trouble, and regular X-ray examinations are of considerable importance in weeding out at an early and curable stage those who are likely to contract Silicosis. Further research on these lines is going on, and is of the greatest importance.

In order that the State should be in a position to reduce the incidence of industrial diseases, it is essential to have some system of notification of the occurrence of such diseases. Under the Factory and Workshop Act 1901 (Section 73), five industrial diseases, namely, anthrax, lead poisoning, mercury poisoning, phosphorous poisoning and arsenic poisoning, were notifiable, and the Act allowed others to be included by Special Order. These requirements have been continued by the Factories Act, 1937 (Section 66), and the list may be extended by Regulation. The Act requires that notice must be sent immediately by any medical practitioner who believes a patient is suffering from any such disease contracted in a factory and by the occupier of the factory in which such disease occurs. The medical practitioner has to notify the Chief Factory Inspector, and the occupier the District Factory Inspector and the Examining Surgeon.

Industrial diseases, which may be defined as arising from, and peculiar to, a given occupation, are not the only illnesses for which industry can be held responsible. In recent years it has been shown that much lost time is due to psychological causes. These cases are perhaps less obvious, but they are far more widespread.

Mechanization of industry and improved production techniques have increased the demands on the human factor and nervous strain has, in consequence, become greater. Outside the factory, life in our towns is now also more intensive and strained than in former times. These factors have had a profound influence on human behaviour and are often responsible for difficulties and disorders of many kinds—dissatisfaction, fear or anxiety, for example, may give rise to maladjustments in the individual and have serious repercussions on family and social life.

Compensation to workers contracting certain industrial diseases

The Workmen's Compensation Act, 1906, provided that compensation in certain circumstances should be payable to workers contracting an industrial disease which was scheduled in the Act. The five diseases mentioned in the 1901 Factory Act and in addition another disease afflicting miners, namely ankylostomiasis, were included in the schedule, but the Home Secretary was authorized to make Orders for the inclusion of further industrial diseases. In 1907 an additional eighteen diseases were scheduled in accordance with the recommendations of a Departmental Committee. Since then additional diseases have, from time to time, been added to the schedule and now well over thirty industrial diseases are included, among which, in addition to those previously mentioned, are the following: manganese poisoning,

benzene poisoning, dermatitis, dope poisoning, chimney-sweeper's cancer, compressed-air illness, cataract caused by exposure to rays from molten or red-hot metal, miner's nystagmus, miner's beat hand, miner's beat knee, miner's beat elbow, glanders, twister's cramp, writer's cramp, telegraphist's cramp, glass worker's cataract, carbon bisulphide poisoning, nickel carbonyl poisoning. Compensation is payable under the Act provided the disease is due to the nature of some employment in which the worker has been employed during the previous twelve months. The liability falls on the employer who last employed the worker in the particular trade to which the disease is due, but the employer can transfer the liability to another employer if he can prove that the disease was, in fact, contracted in the other's employment. If he proves that it was gradually contracted, partly in his employment and partly in the employment of another, he may require the other employer to bear his proper share of the compensation.

The worker seeking compensation for an industrial disease is required to obtain a certificate that he is suffering from the particular disease from the Examining Surgeon for the district in which he was employed and for this certificate a small fee is imposed. Compensation may also be obtained if, in pursuance of the Factory Act regulations, the worker has been suspended by an Examining Surgeon in consequence of the disease. Certain industrial processes are enumerated against each disease in the schedule to the Workmen's Compensation Act and if the worker has been employed in one of the processes, it will be assumed that the disease is due to the employment unless the surgeon certifies or the employer proves the contrary. Thus if a worker employed in pasting lead accumulator plates contracted

lead poisoning, it would be presumed to have been caused by that process, but if this disease were contracted by a miner, he would only obtain compensation if he could prove that the disease was caused by his work. The inclusion on the schedule of the process or processes with which a disease is commonly connected, is not intended to limit claims to cases arising from the scheduled processes, but the burden of proof is transferred to the worker. For example, a riveter's holder-up might contract beat hand in the course of his employment and would be entitled to compensation, even though the industry scheduled for this disease is mining.

The conditions for compensation briefly are that the disease has 'arisen out of and in the course of the employment'; that it is due to an employment in which the worker has been engaged during the past twelve months; that the worker is disabled from earning his ordinary wages for more than three days and that the disease is one included in the schedule to the Act. Three tests are applied before any disease is added to this schedule for compensation, namely:

- (1) Is it so sudden as to be an accident? If so it is excluded, because compensation can be obtained for it in the ordinary way as an accident. Poisoning from carbon-monoxide gas or poisoning from sulphuretted hydrogen gas are excluded from the schedule for this reason.
- (2) Is it so specific to the employment that the causation can be definitely established in individual cases? Special difficulties of this nature are found in cases of catarrh, rheumatism, gastric troubles, or bronchitis, since it is practically impossible to determine if such a disease has been contracted at work or outside. If this test were eliminated, employers might be rendered unduly liable to

claims for compensation in respect of illnesses for which they, in fact, were not responsible.

- (3) Does it incapacitate the worker for more than three days? Only if it does is compensation payable. Thus boiler-maker's deafness is excluded, because it does not incapacitate for the work. Brassfounder's ague is also excluded for though a distinct, it is a transient industrial disease, involving severe shivering, tightness of the chest, shortness of breath, headaches and backaches, followed by profuse sweating. Writer's cramp is in a special category and compensation is limited to one year because it disables only for writing and not for any other occupation.
- (4) Special difficulties have been occasioned by those diseases which take a long time to manifest themselves. Cataract and nystagmus are included, and so also is silicosis. Under a special scheme employers of stone workers, quarrymen and other workers exposed to the danger of contracting silicosis, have to contribute to a general fund for silicosis compensation, but there is no individual liability otherwise on employers. A special scheme has also been introduced applying to workers engaged in processes where asbestosis (a disease of the lungs produced by the inhalation of asbestos dust) is likely to occur.

CHAPTER VIII

INDUSTRIAL ACCIDENTS

Industrial Accidents and their Prevention

Industrial accidents are far more numerous than is generally supposed, since in addition to fatal or serious accidents, which are compulsorily notifiable, a far larger number of minor accidents occur each year. Many of these latter no doubt are trivial, but taken in the aggregate they cause a large amount of suffering and involve a decrease in efficiency. Both worker and employer alike suffer, the worker through physical suffering and financial loss, even though compensation be received, the employer through interruption of production, the loss of experienced workmen, and the cost of compensation or insurance.

For purposes of presenting and analysing accident statistics, it is now general to compute *Accident Frequency Rates* and *Accident Severity Rates*. *Accident Frequency* is the number of accidents occurring in a given time for a certain number of workers. The usual basis is that of 100,000 man-hours worked, and thus the equation for the Frequency rate is as follows:

$$\text{Frequency rate} = \frac{\text{Number of Accidents} \times 100,000}{\text{Total man-hours worked}}$$

The Severity Rate is a measure of the seriousness of the accidents and also takes account of their number. It is measured by the number of hours lost through accidents

per 100,000 man-hours worked. The 'hours lost' through an accident are to be taken as the actual hours that would have been worked if the accident had not been sustained. In calculating the rates, however, difficulties are caused in including those accidents which result in death or permanent disability, but this can be overcome by giving equivalents in hours lost and a scale for this purpose is now adopted internationally. In this scale, for example, death and permanent total disability are each equivalent to 48,000 hours lost; loss of a foot, 19,200 hours; loss of an eye, 14,400 hours; or loss of hearing in one ear 4,800 hours.

The accident severity rate is given by the equation:

$$\text{Severity rate} = \frac{\text{Number of hours lost} \times 100,000}{\text{Total man-hours worked}}$$

Another term used in studies of industrial accidents is that of *Accident Proneness*, and this is used to describe some personal peculiarity which renders an individual susceptible to accident. Defective eyesight, hardness of hearing, or high blood-pressure for example, may be the cause of accident-proneness. In a certain factory 71 workers who showed the greatest accident-proneness were examined, and it was found that 23 had vision less than half-normal in one or both eyes, and another 23 had defective convergence or co-ordination.¹

Nervousness is a major cause of accidents especially when associated with poor co-ordination of hand and eye. Clearly such individuals should not be put in charge of dangerous machines. Both in Europe and America numerous psychological investigations have been made with the aim of removing the accident-prone driver.

¹ *Industrial Psychology*, edited by C. S. Myers, p. 133.

Street railway companies, for example, in Milwaukee, Cleveland, Boston and New York, and taxicab companies in Philadelphia and New York have made use of clinical studies of accident-prone drivers as an aid in the reduction of accidents. There is an increasing tendency to view the occurrence of accidents as an individual problem.

Causes of Accidents

The causes of accidents are numerous, but briefly they may be summarized under the following headings:

- (1) Defects in machinery or other appliances or insufficient protection from moving parts.
- (2) Carelessness.
- (3) Fatigue.
- (4) Unsuitable temperature.
- (5) Insufficient or badly-placed lights.

In the prevention of industrial accidents, the first essential is to provide proper mechanical safeguards such as the fencing of dangerous machinery; guards for cog-wheels, pulleys, belts, chain drives and other moving parts; automatic or quick-stopping devices on machines.

In Great Britain, the Factories Act, 1937, lays down stringent regulations regarding protection from machinery and for the control of dangerous processes. The Home Office has provided an Industrial Museum in Horseferry Street, London, where numerous types of safety appliances are exhibited and where practical advice is given to factory owners or managers in regard to the prevention of accidents. Certain firms make regular use of the museum, and at least once a year send parties of their foremen, engineers or charge hands to be shown round by an inspector. Somewhat similar services are provided

for the coal-mining industry by the Safety in Coal Mines Research Station near Buxton.

Whenever possible safety devices should be incorporated in the machine and be automatic in working (e.g. before moving parts can be touched, the machine should be stopped automatically), rather than reliance be placed on safety appliances worn by the workers. It is not always appreciated that safeguarding appliances may impose handicaps on the worker, and especially where the workers are on piece-rates, there is a natural disinclination to use them. This applies especially to such protective devices as goggles, gloves, or masks, which are often to be seen lying about unused, though from time to time accidents occur from lack of such protection. Nevertheless, though their adoption is only to be recommended in lieu of better devices, protective appliances are an important safeguard against accident, and the importance of using them should be inculcated by foremen and management. Often this is only a matter of custom or habit and in this connexion, 'Works Safety Committees' may do good work by stressing the importance of such safety precautions.

To illustrate the nature of such devices, a few words may not be out of place regarding industrial goggles. Eye protection has long been regarded as of prime importance and even among unadvanced peoples, protective devices have been evolved to meet special dangers as witness the slatted wooden goggles employed by Eskimos or the pieces of tourmaline used by the Tibetans to prevent snow-blindness. In the stone-cutting and similar industries, emery-wheel injuries could be avoided in nearly all cases by wearing goggles and additional protection against flying particles can be obtained by the use of laminated or 'safety glass' in the

goggles. In some works, safety has been increased by fitting emery wheels with glass protectors. Under Section 49 of the Factories Act, 1937, suitable goggles or effective screens must be provided for workers in any process specified by regulations which involves a special risk of injury to the eyes from particles or fragments thrown off in the course of the process.

Workers' eyes can also be injured by brilliant incandescent light, but it is not difficult to find a glass with the necessary properties to afford adequate protection when the nature of the rays is known, e.g. for glass blowers, welders, tinplate rollers.

Partly the well-known reluctance among workers to wear goggles is due to the fact that the appliances provided are too heavy and uncomfortable. Goggles should be comfortable, light in weight, give the maximum field of vision and have adequate ventilation. Other qualities required are that they should be free from steaming of the lenses, be of sufficient strength for industrial use and withal be reasonable in cost.

Recently a museum of industrial devices for the prevention of eye injuries was opened at the Royal Eye Hospital, St. George's Circus, London, and an Industrial Eye Committee has been formed to encourage the use of protective appliances and to combat prejudice or negligence in their use. Speaking at the opening of the exhibition Mr. Joseph Minton estimated that some 250,000 eyes are injured every year in Great Britain through industrial causes, and numerous cases of blindness or permanent damage to sight resulted, but of these accidents eighty-five per cent he stated are preventible.

Special clothing for the whole, or parts, of the body is necessary in many industrial processes to protect workers against wet, dust, burns, cuts, extremes of temperature,

oils or acids. In some dangerous processes, the provision of such clothing is legally compulsory, and in others certain employers provide it as they realize its necessity. Examples of such protective clothing and appliances, together with illustrations of processes where they have been utilized and the dangers required to be guarded against, are listed in the table on 160.

According to the 1936 Report of the Safety in Mines Research Board, the value of protective equipment has been conclusively proved. 'The use of hard hats,' they stated, 'is now well established in all the coalfields, and some remarkable reductions in head injuries, following the introduction of the hats, are recorded in the reports of the district committee.' The use of gloves, safety-boots, shinguards and goggles has also increased among underground workers in the coalfields.

The fullest possible provision and use of protective devices will not, however, of themselves, eliminate industrial accidents, since these may also be the result of fatigue, carelessness, unsuitable working conditions or other factors.

Fatigue tends to increase the accident proneness of individuals, just as a tired horse is more likely to stumble than one which is fresh. During the war, records of accidents were kept at a number of munition factories, and in one such factory, it was found that the number and distribution of accidents was nearly the same for a 12-hour day as for a 10-hour day among the male workers, but among women workers, it was about three times that of a 10-hour day, indicating that the women could not stand the strain of the longer working hours, and that their fatigue led to accidents.

During the morning spell, it is often found that the number of accidents increases as the hours pass, partly due to the increased rate of production as the workers

<i>Protective device</i>	<i>Processes where used</i>	<i>Dangers to be guarded against</i>
Clogs	Bacon curing; coke washing; soap boiling	Damp
Hard hats	Coal-mining; quarrying	Head injuries from falling coal or rock
Fire-proof clothes or aprons	Dry cleaning; fire-lighter making; chlorate processes	Burns
Veils	Handling of slag, wool, kapok, feather or down stuffing	Dust
Rubber gloves	Chrome dyeing	Chrome poisoning
Gauntlets	Acetylene welding; electric welding	Burns
	Bottling	Broken glass
Waterproof aprons	Flax spinning	Wet
Helmets and breathing tubes	Sand blasting (inside chamber)	Dust and grit
Sea boots, sou'wester and waterproof suit	Fish curing	Wet and salt
Masks	Pasting lead accumulator plates	Lead poisoning
Ear plugs	Boiler-making, riveting	Noise
Spats	Moulding	Molten metal

'warm up' to the work, but also due in part to increased carelessness, inattention and fatigue. On night shifts, accidents are sometimes more frequent during the first hour or two, as the workers will probably have been up for several hours before starting work. Women workers are often afraid of machinery when they start work in a factory, but in time, through necessity, they overcome this fear. Nevertheless, there is a strain in suppressing this instinctive fear and when they are fatigued, or below par, their vigilance may break down and accidents result. Excessive fatigue is undoubtedly an important cause of accidents; but moderate fatigue is not in itself a cause of accidents. Speed of production, especially if it upsets the worker's natural rhythm, would seem to be a more important factor in the causation of accidents.

Age and experience also play a part and a Departmental Committee on Accidents in Factories set up by the Home Office, found that the accident risk among young persons was considerably higher than among adults. Many of these accidents are due to want of proper supervision and to lack of adequate instruction and training. It is a common experience in factories to find that the accident frequency rate goes up when new and inexperienced workers are engaged. Inadequate lighting, insufficient ventilation and bad atmospheric conditions are further causes of accidents.

The Report of the Committee on Lighting in Factories, issued in 1915, stated that it had been found that there was an excess of twenty-five per cent in accidents during artificial light, mainly as a result of persons falling. Other records show that about twice as many accidents occur in the two winter quarters of the year for that part of the day when artificial light has to be used, as compared with the two summer quarters.

Investigations carried out by Dr. H. M. Vernon and the Industrial Health Research Board have shown that accidents are fewest when the temperature of the work-room is between 65° and 69° F., but that they tend to increase rapidly as the temperature becomes higher and also, though more slowly, at lower temperatures. The optimum temperature, from the point of view of accident prevention, is not necessarily the most suitable for working efficiency, but a temperature of 62½° F. shows an accident rate very little above the minimum and generally ensures reasonable working efficiency and comfort for sedentary workers.

Information collected during the war from various munition factories affords an important source of material regarding the effects of temperature on the accident rate. In a large shell factory, where the heating arrangements were unsatisfactory, the number of accidents on cold winter days was double that of an average summer day. In a fuse factory, it was found that accidents were thirty per cent more numerous when the temperature was 77° F. than when it was 67° F. It is also noticeable in shipyards that accidents, such as falls from scaffolding, are most numerous in winter.

The 'Safety' Movement

The majority of industrial accidents are due to causes in which the human element is an important factor. Greater attention is now being devoted to this aspect of the problem, in particular by the 'Safety First' Movement. The National 'Safety First' Association has its headquarters in London, but local committees have also been established in London, Birmingham, Liverpool, Manchester, Sheffield, Tees-side and other centres. The object of the movement is to educate employers and

workers in the importance of accident prevention. The Association does not work for profit, but exists solely for the benefit of its members, supplying posters, literature, a safety engineer service and carrying out propaganda work by lectures, conferences, etc. The posters are one of the main features in its programme and a new poster is issued each week so as to maintain the interest of workpeople.

One of the best methods for securing a reduction in the number of accidents has been found to lie in the formation of Works Safety Committees. On these, both the management and workers are represented and the committees inquire into the causes and circumstances of accidents. Owing to the intimate knowledge of the factory, the members of such committees are in the best position to make sound recommendations to prevent the recurrence of accidents.

Valuable information regarding methods for the prevention of accidents is contained in a Home Office pamphlet entitled *Safety Organization in Factories*. Therein it is stated: 'It has now come to be generally recognized that the problem of accident prevention can never be solved merely by an extension of the statutory regulations, but that adequate safety organization within the industry and within the individual factory, in which both employer and worker must take their part, is necessary to secure any substantial reduction in the annual toll'.¹

In the same pamphlet it is stated that the most complete system of safety organization in a factory or other industrial plant should consist of (1) a Safety Committee (2) a Safety Officer, and (3) a Bulletin and propaganda service. 'It is the experience of the Factory Department that the high-water mark of efficiency is only attained

¹ *Safety Organization in Factories*, p. 3.

when the interest of the workers is secured and their co-operation in dealing with the accident problem obtained. The most practical method of obtaining such co-operation is through the agency of a safety committee. Such a committee should consist of a certain number of members nominated by the employers and a certain number elected by the workers on the basis of departments or sections. Where women are employed they should be eligible for nomination or election. In the case of large works with several important sections, it may be advisable to have a safety sub-committee for each section and a main committee partly constituted of representatives from the sectional committees. Where works committees are already established, safety work may be undertaken by them or by a sub-committee formed from the Works Committee.¹

It is highly important in the interest of accident prevention that all firms should arrange for the calculation of accident frequency and severity rates and in addition it is desirable that all accidents should be classified according to causation, so that attention may be drawn to dangerous parts of the machines and plant or to dangerous practices.

Safety Committees in some firms have reduced the number of accidents to such an extent that a reduction in the firm's insurance premiums against accidents has been effected. As an example of what can be done in this direction, the experience of a firm in the Sheffield area may be cited.² This firm introduced safety principles in 1922 and their compensation payments per 1,000 hours worked were reduced as follows:

¹ *Safety Organization in Factories*, p. 3.

² Annual Report of the Chief Inspector of Factories and Workshops for the year 1931, Cmd. 4098, p. 21.

1922	6s. 4d.	1928	2s. 6d.
1924	4s. 1d.	1930	1s. 4d.
1926	2s. od.		

In a Lancashire firm, an experiment has been tried in interesting the men in accident prevention which has had very successful results and might well be copied by other firms. A special notice board was provided with a slot marked off into days for each department. Red and black slides are placed in each slot; the red indicator showing the record number of days which the department has run without a lost time accident and the black indicator showing the number of days since the last lost time accident.

In the 1931 Report of the Chief Inspector of Factories particulars of accidents among seventy-eight factories of the Welsh Plate and Sheet Manufacturers' Association are given, which show how the frequency and severity rates fell as a result of Safety Committees operating in the mills. 'It is difficult,' the Report says, 'to see any other reason for the reductions except the work done by the Safety Committees operating in the mills.'

	1927	1928	1929	1930	1931
Frequency rate	. 85.6	76.5	67.7	69.7	62.1
Severity rate	. 2.2	2.0	1.7	1.9	1.9
No. of lost time accidents	. 4,475	4,271	3,562	3,324	2,599

Workmen's Compensation for Industrial Accidents

Under the Employers' Liability Act, 1880, all employers of labour are liable for heavy damages (up to three years' earnings of the injured person) for injuries caused by the negligence of any person in the service of the employer entrusted with the superintendence of the workmen, or by reason of any defect in the condition of the works,

works, machinery, or plant, connected with, or used in the service of the employer.

The first Act to break away from the conception of negligence on the part of the employer as the only basis for a claim to compensation for accidental injuries, was the Workmen's Compensation Act, 1897. This Act was limited in scope, as it applied only to certain classes of employment and excluded workshops, but within its limits, it was found to work satisfactorily, and its principles were subsequently extended by the Workmen's Compensation Act, 1906. Under this Act, as amended and amplified by the Workmen's Compensation Act, 1923, employers are liable to pay compensation to any of their employees, without distinction as to age or sex, who, through accidents arising out of, and in the course of their work are disabled from earning their ordinary wages for more than three days.¹ Where the accident is fatal, compensation is payable to dependents in the form of a lump sum. For permanent, or temporary, disablement, weekly payments are made, though in certain circumstances, these may be compounded for a lump sum.

The Acts cover all manual workers and also those non-manual workers whose salary or wages do not exceed £350 per annum. The 1923 Act extended the provisions to certain classes of workers previously excluded, such as London taxi-drivers, golf caddies engaged through a club, most classes of share fishermen and persons in addition to sailors employed on board ships, e.g. cattle-men, barbers and P.O. employees. The income limit for non-manual workers was raised to £350 per annum in place of an income limit of £250 per annum in the 1906 Act.

¹ Under the 1906 Act the period was 'for more than one week.'

The 1923 Act also altered the previous Act so as to secure that the provisions were brought to the notice of workmen. It defined the circumstances under which employers might stop or reduce compensation payments; gave greater protection to workmen who settle their claims for lump sum payments; allowed weekly compensation to be increased or diminished when fluctuations occur in the rates of remuneration in the class of employment in which the worker was engaged; permitted a partially disabled workman to recover compensation on the scale for total disablement when he is prevented by his injury from obtaining employment. A further provision was a new requirement whereby arrangements must be made in every factory for 'first-aid' treatment of accidents.

The essential legal requirement for compensation is that the accident must 'arise out of and in the course of the employment'. The word accident is interpreted in the law courts in a broad sense as denoting any unlooked-for mishap or any untoward event which is not expected or designed. Thus the Act has been held to cover the cases of a sailor who collapsed from heat stroke in the tropics, a gamekeeper injured by a poacher, or the worker who meets with a mishap which intensifies a trouble already present, just as much as the more obvious cases such as a shunter who is injured by a moving truck or a builder who falls off a ladder.

The term 'workman' is also used in a wide sense and is defined as 'any person who has entered into or works under a contract of service or apprenticeship with an employer whether by way of manual labour, clerical work or otherwise and whether the contract is expressed or implied, is oral or in writing'. A few classes of persons are expressly excluded by the Acts, namely:

- (1) Persons engaged in non-manual labour whose remuneration exceeds £350 per annum.
- (2) Casual workers employed otherwise than for the purpose of the employer's trade or business.
- (3) Members of a police force for whom provision is made in other Acts.
- (4) A member of an employer's family dwelling in his house.
- (5) 'Outworkers' employed in their own homes or other premises not under the control or management of the person who gave out the materials or articles.
- (6) Persons undertaking to do work as independent contractors. Here the relationship of master and servant does not exist and the person not being a 'workman' would have no claim to compensation.

The conditions which must be fulfilled before a workman can obtain compensation for an injury through accident are:

- (1) The injury must disable him for more than *three days* from earning full wages at the work at which he was employed.
- (2) The accident must *arise out of the employment*. This means that the accident must have arisen because the workman was doing something which he was employed to do or because he was exposed to some particular risk. Thus it has been held that a bricklayer killed by lightning when working on a scaffold was injured by accident arising 'out of' his employment because it exposed him to that particular risk, but an agricultural labourer stung by a wasp with serious consequences did not obtain compensation because it was held that he was no more likely to be stung by a wasp at his work than elsewhere.

If a worker meets with an accident because he is doing something which he is prohibited from doing

or which he is not employed to do, the courts have decided that the accident does not 'arise out of the employment'. The 1923 Act, however, provides that if the accident results in death or serious and permanent disablement, it is to be treated as arising out of the employment if at the time of the accident the workman was doing something for the purposes of and in connection with his employer's trade or business.

(3) The accident must arise *in the course of the employment*. Compensation is not payable if the accident happened before the employment commenced or after it terminated. The time at which the employment begins or ends depends on the circumstances and is not necessarily the same as the time when the workman commences or stops work, e.g. it may be held to have begun when the worker arrived at his employer's premises.

The procedure to be followed by a workman in making a claim for compensation is laid down by the Acts. First, notice of the accident must be given to the employer as soon after its occurrence as possible and before the worker voluntarily leaves the employment. This notice may be given either verbally or in writing to the employer or to any foreman or official under whose supervision the workman is employed or to any person designated by the employer for the purpose. On the employer there is an obligation under the Factories Act (Section 64) to report all fatal and other accidents involving disablement for more than three days to the District Factory Inspector. Under provisions of the Factory Acts, an *Accident Book* has to be provided in mines, quarries, factories and certain other premises, and an entry made therein by the workman or some one acting on his behalf will be accepted as sufficient notice if made as soon as possible after the accident has occurred.

Failure to give notice of the accident may, except in certain circumstances set out in the Act, debar the workman from taking proceedings to enforce his claim. The notice is intended to facilitate inquiry by the employer into the circumstances of accidents, as otherwise the employer might be prejudiced, or claims might even be made for accidents which occur while workers are off duty. After receiving notice of the accident, an employer can require the workman to submit to a medical examination.

The next step is for the worker to make a claim for compensation to his employer, and this must be done within six months from the date of the occurrence of the accident. If this is not done, compensation will not be obtainable except where reasonable cause for failure to make the claim can be given.

Compensation for disablement takes the form of a weekly payment which, if not commuted for a lump sum, is payable as long as the disablement lasts, though no compensation is payable for the first three days of disablement unless it lasts for four weeks or more. All claims in cases of disablement may be settled by agreement between employer and workman, but if this is done a memorandum of the terms of the agreement must be sent to the Registrar of the County Court for registration. To prevent unfair agreements for lump sums being made, the Court may refuse to register the agreement or it may make such other order as it thinks just.

In default of agreement, a claim for compensation may be settled (1) by proceedings in the County court; (2) by arbitration before a private arbitrator; or (3) by arbitration before a works committee. A scale of compensation is laid down wherein a distinction is drawn

between workmen earning fifty shillings a week and upwards, and those earning less than fifty shillings. The former are entitled, for total disablement, to a weekly payment of not more than half these earnings up to a maximum of thirty shillings, and for partial disablement to a weekly payment equal to half the difference between earnings before the accident and earnings after the accident.

For the lower paid workers the scale is complicated and reference should be made to the Act.

In the case of fatal accidents, there are four divisions:

- (a) Where the worker leaves any person wholly dependent on him, £200 or 3 years' earnings up to £300, whichever is the larger.
- (b) Where the worker leaves persons partially dependent on him. A sum not exceeding the above which will be reasonable and proportionate to the loss sustained by such persons.
- (c) Where the worker leaves no dependents. Reasonable medical expenses and burial expenses up to a maximum of £15.
- (d) Where the worker leaves children under the age of 15 years. An additional allowance for each child.

Compensation when dependents are left must be paid into the County Court in England, or the Sheriff Court in Scotland, not direct to the dependents, and the Courts invest or otherwise apply the money as seems best for the dependents. If negligence can be proved on the part of the employer, compensation to larger amounts can be obtained under the Employer's Liability Acts.

Employers are not bound to insure their workers against accidents, but it is generally very desirable that they should do so, and for small employers, it is practically essential.

CHAPTER IX

ORGANIZATION OF LABOUR

TRADE unionism is a growth of comparatively recent times. In the medieval period, there was no rigid stratification of classes because only a small amount of capital was required to set up in business. The industrious journeyman could, therefore, expect to become a small master-craftsman without any great difficulty.

It was not until conditions changed, and the amount of capital required to set up in business as an employer became greater than the earliest trade unions were formed. These were the 'Trade Clubs' which developed during the seventeenth century as a result of the capitalistic organization of industry, though be it noted prior to the introduction of machinery on a large scale. In the eighteenth century, the trade clubs among skilled workers such as hatters, carpenters, plumbers, basket-makers, brush-makers, curriers, paper-makers, wool-combers, millwrights or coopers, were both numerous and strongly organized especially in Dublin and London. The movement, however, was confined to the higher paid skilled workers, and did not touch the lower ranks of workers such as farm-labourers, miners, general labourers or the operatives in the new factories. 'The typical trade club of the town artisan of this time was an isolated ring of highly-skilled journeymen, who were even more decisively marked off from the mass of the manual workers than from the small class of capitalist employers.'¹

¹ S. and B. Webb, *The History of Trade Unionism* (Revised Edition, 1920), p. 45.

Despite a whole series of laws against combination, culminating in the famous Anti-combination Acts of 1799-1800, the trade clubs continued to flourish.

The London hatters and the brush-makers, for example, were highly organized, and were in touch with clubs belonging to their trades in most of the large towns. They provided sick, burial and out-of-work benefit for their members, and had a system of 'tramping tickets' for members seeking work who went the round of the various towns until they got a job.¹

During the first quarter of the nineteenth century, trade unionism in England was driven underground as a result of the anti-combination laws, though in Scotland the laws were largely inoperative as Scottish legal opinion, jealous of its own great legal heritage, did not favour the enforcement of a law difficult to interpret in terms of Scottish legal procedure.

In the larger towns, such as London, Dublin and Liverpool, the main effect of legal coercion was to make the treatment of non-unionists or 'scab men' more arbitrary. Internal discipline became stricter and power tended to become concentrated in the hands of a few individuals whose orders were always obeyed though these leaders were not generally known to the rank and file. Many of the clubs took the form of secret societies with strange rituals and fearsome oaths.

A similar result followed the anti-combination trades law of 1845 in Germany and many interesting parallels can be drawn between the two countries, allowing for the fact that industrialization was of later growth in Germany than in England. What they were forbidden by the law to do in public, they developed all the more vigorously in secret, adopting a grotesque and mysterious ritual. Propaganda spread from inn to inn as the

¹ For an account of the Brush-makers' Club see W. Kiddier, *The Old Trade Unions*.

journeyman wandered from town to town or from workshop to workshop in accordance with the traditional fluidity of German labour. The chief result of this active propaganda was the formation of two radical organizations—‘The Federation of Outlaws’ and the ‘Federation of Communists’, the latter of which issued the famous ‘Communist Manifesto’.

In Britain, the repeal of the Anti-Combination Laws was effected not by any great popular movement such as the later Factory Act agitations, the Anti-Corn Law League or the Reform Act Movement, but by the quiet and persistent work of two men, Francis Place¹ and Joseph Hume².

Eventually they succeeded in obtaining the repeal of the Anti-Combination Laws in 1824, but in the following year a new Combination Law was passed owing to the numerous strikes and lock-outs that followed on repeal of the Acts. Under the 1825 Act workmen were permitted to combine, but the Common Law of Conspiracy was applied to the actions of trade unions, and workers were prohibited from interfering with the free actions of others during a strike.

In the period 1829-1834, several attempts were made to establish one big union which would be open to all workers irrespective of their craft or industry; an idea which has recently been revived in certain trade union quarters.

But these *Trades Unions* or confederations were all short-lived and were torn apart by internal dissensions. They were so large as to be unwieldy and were weakened financially by sectional disputes and local strikes, while they had also to meet the determined opposition of

¹ Francis Place, formerly a journeyman but then a leather breeches maker with a shop in Charing Cross Road. An adept in wire-pulling, political intrigue and Parliamentary jobbing.

² Joseph Hume, a radical M.P. and a friend of Place.

employers. One of these organizations, the 'National Association for the Protection of Labour', managed, in 1830, to secure the adherence of some 150 different unions with about 100,000 members, including cotton spinners, silk weavers, calico printers, mechanics and blacksmiths, but it only survived for about two years. Another, the 'Grand National Consolidated Trades Union', in 1834, enrolled something between a half million and a million workers, including even women and farm-labourers, both classes of workers very difficult to organize. It adopted a ritual and initiation ceremony from the earlier unions, with wooden axes, a Bible, surplices and a transparent skeleton, while the clapping of hands in unison and the stamping of feet were adopted to induce awe in the blindfolded initiates, who were required to swear a solemn oath never to reveal its secrets. For a time its success was remarkable, and even the washerwomen of Kensington came out on strike, but its progress was shortlived, and the final blow came in 1834 when six Dorchester farm-labourers were convicted of administering an unlawful oath and received a grossly excessive sentence of seven years transportation.

It was during this revolutionary phase in the history of trade unionism that the 'General Strike' was first advocated. William Benbow—shoemaker, bookseller and coffee-house keeper—suggested that the whole working class should declare a 'national holiday' and lay down tools for a month to demonstrate that labour was the sole source of wealth.

After the failure of the trades union movement, working-class agitation was directed to political rather than industrial action and energies were absorbed in the Chartist Movement. Trade unionism, nevertheless, did not disappear and its structure was gradually rebuilt along the lines of the 'New Model' unions, of which the Amalgamated Society of Engineers formed in 1851 was

the outstanding example. These were non-militant bodies and concerned themselves largely with friendly society activities. This gave them a financial strength hitherto unknown and laid the foundations of the solid progress since made by the trade union movement in this country. Membership became more permanent and trained staffs of full-time officials were employed. The central executive kept complete control of strike pay but benefits were administered locally. Secrecy was avoided and all business transactions were published. Public opinion gradually became more favourable as a result of the new methods, and the unions were able to secure several revisions in the law which eventually put them in a better, indeed a privileged, legal position.

In 1867, the Master and Servant Act was amended and put workers on the same footing as employers in regard to breach of contract. In 1871, an Act was passed whereby a trade union was declared not to be illegal on the grounds that it was in restraint of trade; that it should be entitled to be registered as a friendly society¹ and that it could not be sued in a court for damages.

A second Act passed at the same time, however, forbade any violence, threat or intimidation during the conduct of a trade dispute and was so worded as to prohibit 'peaceful picketing'.

In 1875, 'peaceful picketing' was legalized and the acts of a group of workmen were no longer criminal unless they were so if performed by an individual.

The next important phase of trade union development is that of 'New Unionism' during the years 1888 to 1890. A new body of opinion had grown up among the younger

¹ In 1867, the Queen's Bench on appeal in the case *Hornby v. Close* had decided that trade unions being outside the scope of the law could not proceed against a fraudulent treasurer under the provisions of the Friendly Societies' Act.

trade unionists who denounced the caution and individualism of the older members. The movement also during these years was permeated with socialism, largely owing to the influence of two books—Henry George's *Progress and Poverty*, and Karl Marx's *Das Kapital*.

Organized demonstrations of the unemployed were held and attempts were made to bring unskilled workers into the trade union movement. In 1888, the London match girls came out on strike and succeeded in obtaining their demands while in 1889, the London dockers, after a five weeks' strike, and largely through the mediation of Cardinal Manning, obtained their claims for the 'docker's tanner' (sixpence per hour), and for better conditions of employment.

These successes gave great impetus to the organization of unskilled workers, and many new unions were formed among them. These were militant societies, providing few, if any, friendly benefits and requiring only small contributions from their members. Their nature was well described by the General Secretary of the Gas Workers' Union in 1889, who stated: 'We have only one benefit attached and that is strike pay. I do not believe in having sick pay, out-of-work pay and a number of other pays.'

In the subsequent development of trade unionism up to 1914, interest centres mainly on the legal aspect. In 1901, the Taff Vale Railway Company sued their workers' union for damages suffered during a strike, and the House of Lords on appeal held that the union was liable for the acts of its members. From the trade union point of view, this put them in an impossible position, since irresponsible members might involve them in heavy damages no matter how carefully their officials and the great majority of their members acted. New legislation was demanded and in 1906, the Trades Disputes Act granted immunity to trade union funds. No action could

be brought against a trade union or its officials in respect of any wrongful Act committed by its members on its behalf. This act also legalized 'peaceful picketing', so long as no violence or threats were used.

In 1909, it was held in the Osborne judgment to be *ultra vires* for a trade union to make a political levy on its members. The Trade Union Act, 1913, was eventually passed to placate trade union agitation and this permitted trade unions to establish a political fund for the support of Parliamentary candidates, provided that after a ballot, a majority of their members favoured such action. The political fund was to be kept separate, and members, provided they gave notice of objection, were not to be obliged to contribute. Contribution to this fund was not to be a condition of admission, nor could members be penalized for refusing to contribute.

This remained the position until the Trade Union Act, 1927, which was passed as a result of the General Strike of 1926, made it unlawful to require contributions to the political fund, unless members expressed their willingness to do so in writing. Political levies must be made separately and no other assets of a trade union can be used for political purposes.

This important Act made illegal any strike or lock-out designed or calculated to coerce the Government either directly or indirectly by inflicting hardship upon the community, if such strike had any object other than the furtherance of a trade dispute within the trade or industry in which the strikers are engaged.

Men who refuse to take part in an illegal strike cannot be deprived of any trade union benefit to which they would otherwise be entitled, and the union cannot expel them notwithstanding anything to the contrary in its rules. Members illegally expelled can be awarded damages or compensation by the courts out of the trade union's funds and it therefore follows that the union's funds would

become liable to serious depletion should a fair proportion of its members refuse to take part in an illegal strike. Picketing also has been restricted. Strikers are prohibited from meeting outside a worker's house so as to make him apprehensive of injury, and a non-striker must be allowed to go freely between his house and his place of work. Finally, special provisions apply to Civil Servants. They are not prohibited from forming trade unions among themselves, but they are forbidden to strike in sympathy with other unions or to help them.

Trade Union Structure

Trade union organization takes various forms, the most important division being that between union by craft and union by industry. The earlier trade unions were generally craft unions; membership being confined to workers engaged in the same or similar types of work. Such societies were often exclusive and some forty or fifty years ago it was not unusual to find a special room in the public-houses for these workers, e.g. the 'spinners' room' in those of Lancashire and Cheshire, or the 'shipwrights' room' at the seaports.

In the craft union, the basis is that the workers by whomsoever employed and in whatever industry, should be organized in a union composed of fellow-craftsmen only, perhaps even of a specialised section only of a craft. Examples of typical craft unions to-day are the Amalgamated Society of Coopers; Amalgamated Society of Journeymen Felt Hatters; Amalgamated Weavers' Association; Railway Clerks' Association; or the Glass Bevellers' and Kindred Trades' Association.

Some of the craft unions are very small and localised, but have succeeded in standing out against current trends towards amalgamation. For example, in 1935, the Spring Trap Makers had only 70 members, the Tape Sizers' Protective Society in the Rossendale Valley had

104 and the Anvil and Vice Trade Association had 125 members.

Some of the craft unions cater for the needs not of one single craft, but for a group of related crafts. Such, for example, is the Amalgamated Engineering Union, which now includes pattern-makers, turners, fitters, millwrights, tin-smiths, electricians and many other specialized engineering crafts. The Boiler-makers' and Iron and Steel Ship Builders' Society is a 'kindred craft' union of workers in iron and steel and its members—riveters, platers, caulkers, angle-smiths, sheet-iron workers and other skilled tradesmen—are employed in many industries, including shipbuilding, marine- and land-boiler shops, bridge-building and railway workshops.

Generally the members of a craft union will be found scattered throughout many industries. In some ways, this is a source of weakness, since it involves difficulties in organization and in the formulation of policy and may involve the union officials in numerous negotiations; but on the other hand, it has certain advantages, e.g. it is easier to assist workers in one branch engaged in a dispute.

Union by industry implies the grouping of all the different workers engaged in the industry, whatever their grade or occupation, into a single union. There is no example in this country of a fully-organized union of this type, though the Miners' Federation, the National Union of Railwaymen, and to a less extent the National Federation of Building Trades Operatives, approximate to such an organization.

The National Union of Railwaymen opens its ranks to all railway workers, skilled and unskilled, manual and clerical, male and female, and to all the workers engaged in auxiliary enterprises such as the workshops and road transport. But there has been much controversy with other unions and further, in practice, the N.U.R. has

not been able to obtain complete unity, as the majority of the trade unionist clerical staff belong to the Railway Clerks' Association, while drivers and firemen have a union of their own.

The idea of union by industry has gained ground fairly steadily since about 1910, owing to a belief that it is superior to craft unionism for collective bargaining purposes and also because it has been advocated as a first step towards the attainment of self-government in industry.

Yet a third principle of organization is that of 'employment unionism'; for example, a union might be formed among employees of Local Authorities. This type cuts across both the craft unions and those organized by industry, but it is not clearly marked off from union by industry since the N.U.R., for example, might be described as being organized on the basis of the employer.

The unions which cater for general workers are yet another type. These recognize no boundaries of industry and nearly one-fifth of the organized workers belong to such unions. The two outstanding examples are the Transport and General Workers' Union, and the National Union of General and Municipal Workers. These unions represent a remarkable diversity of trades and occupations, and the main argument put forward in their favour is that their members may be employed in one industry to-day but in another to-morrow. Some of the leaders of these unions favour the idea of the 'One Big Union' which would embrace workers of every kind, scientifically divided into departments and directed from a common centre, with equality of benefits and financial liabilities.

Trade Unionism among Women Workers

Before the Great War, women members were generally regarded with disfavour by the trade unions. During

the war period, women entered industry in large numbers and the men's unions became alarmed at the probable effect on wage rates if the women remained unorganized. In this way, the old exclusiveness of the unions was broken down and the status of women in the trade union movement was permanently improved. Provisions are now made for the representation of women on the controlling bodies and women organizers have been appointed. The few exclusively women's unions that still exist are nearly all outside the field of manufacturing industries, e.g. teachers and Civil Servants. Nevertheless, there are still far more women workers outside the ranks of trade unionism than within them. The explanation would seem to be that the average age of women in industry is lower than that of men, and since many of them have a shorter industrial life to look forward to, they are not so inclined to join a union. Where they tend to remain in industry after marriage, as in the cotton textile industry, their organization is more complete.

Trade Union Amalgamation and Federation

Amalgamation has played a prominent part in the development of the larger unions, such as the Amalgamated Engineering Union or the National Union of Railwaymen. Amalgamation made great headway during the years 1911 to 1914 and again after 1917, when amalgamation was facilitated by an amendment of the law which substituted for the former two-thirds majority of the whole membership of each society, a twenty per cent majority in favour on a fifty per cent vote of the members. This made amalgamation much easier, as formerly a sufficient majority was difficult to obtain owing to changes in workplaces and residence of members and absentations from the poll. In the past, the legal difficulties had been surmounted by various

expedients such as the smaller union voting its funds to the larger society and then dissolving itself.

About one-half of the total trade union membership is now to be found in some eight or nine large unions, including the Miners' Federation, the Transport and General Workers' Union, the National Union of Railwaymen, the National Union of General and Municipal Workers, and the Amalgamated Weavers' Association.

Nevertheless, despite the great number of amalgamations which have taken place, there are a large number of separate unions, amounting to over 1,000. The factors which have tended to hinder amalgamation are several: skilled craftsmen prefer to retain their own union, partly through pride of craft and partly because they feel they can obtain better terms for themselves than if they were submerged in a big organization with a diversity of interests; financial considerations have also played a part, since those who formerly paid small subscriptions do not wish to pay more, while those who have paid more do not welcome new members who would pay less; finally, questions of prestige, vested interests and the like may play a part.

Federation

An alternative to amalgamation is federation, whereby the constituent unions can still maintain their identity while co-operating in all matters affecting their common interests. Important federations are the National Association of Unions in the Textile Industry, with head-quarters at Bradford, which federates various unions in the woollen and worsted trades; the 'United Textile Factory Workers' Association', with central offices at Accrington, which acts in a similar capacity for cotton textile workers, and the Federation of Engineering and Shipbuilding Trades.

The Transport Workers' Federation, though railwaymen and tramwaymen are excluded as they have their own unions, is an important organization, including among its affiliated unions the Dockers; Sailors and Firemen; Watermen and Lightermen; Ship Stewards and Cooks; Engine and Crane Drivers; Carters; Vehicle Workers; Coalheavers; Gas Workers, and the National Amalgamated Labourers.

Federation varies greatly in type; at the one end of the scale there are federations such as those of the Miners or the Iron and Steel Workers, which practically constitute single unions, while at the other end of the scale there are federations in which the constituent unions do little to co-operate beyond holding periodical congresses.

Internal Trade Union Organization

In the early trade unions there was little or no formality about methods of government, resolutions being carried by a show of hands of the whole body of members assembled in their club room. As the societies expanded and lodges were established in different towns, the head-quarters were moved periodically from place to place so that each lodge might act as 'governing branch' in its turn. Later a fixed head-quarters was established and paid officials appointed.

Nowadays, the more important trade unions have large administrative and clerical staffs. The most important officials are the paid General Secretaries, who are responsible for all the secretarial work of the union, as well as for a large part of its financial affairs. As a rule, also, they carry out negotiations with employers, and they have to exercise their authority in various internal disputes or when unauthorized sectional strikes break out. In the largest unions there are, in addition, a number of assistant secretaries, paid organizers and other officials. Very elaborate organizations, for example,

have been built up by the engineers, boiler-makers, printers, railwaymen, cotton spinners and coal miners.

As between different unions, great differences are to be found in their methods of organization owing to technical differences in the various industries, differences in the degree of localization of the industry, or other special or local conditions.

This shows itself especially in the amount of control over union policy or administration given to local branches or to the rank and file. Where the industry is scattered over the country, or when the employers are well organized, the tendency is to concentrate more power in the hands of the permanent officials.

As regards finance, the sums handled by trade unions in the aggregate are very large, amounting to something more than £10,000,000 per annum. Of this, nearly £7,500,000 is derived from members' subscriptions or levies; about £2,000,000 from the Ministry of Health in respect of administrative expenses on National Health Insurance, since many trade unions are 'Approved Societies', while the remainder comes from other sources including investments.

Members' subscriptions range from about 3d. or 4d. a week in the labourers' societies to 1s. 6d. or more a week in the skilled trades. Entrance fees range from 6d. or 1s. to £1 or more. Thus the National Union of General and Municipal Workers has weekly contribution rates of 6d. for men, and 3d. for women, whereas the London Society of Compositors has rates of 4s. 6d. or 4s. 9d., of which 3s. 6d. is set aside to meet superannuation claims.

Trade union expenditure, other than from the political fund which must by law be kept separate, falls under three main headings: (1) Benefits; (2) Administrative expenses; and (3) Affiliation fees to federations, Trades Union Congress, or other bodies.

Members generally pay inclusive subscriptions for all

purposes and there is usually only one fund for all three items. Benefits vary considerably as between different unions. Some provide strike pay, out-of-work donation, sickness, accident and funeral benefits, and superannuation. Others may only provide strike benefit.

The disadvantage of lumping together all the various charges on one fund lies in the fact that during periods of industrial strife, it may be impossible to pay out sickness or other benefit for which members have contributed, but against this some unions argue that such benefits are not an end in themselves but rather a means of strengthening the collective bargaining powers of the union.

The introduction of National Social Insurance and the development of Unemployment Assistance has, however, relieved trade union funds of their heaviest burdens.

As mentioned previously, many trade unions are Approved Societies for National Health Insurance, and if this is so in any union, the fund must be kept separate and properly administered, being subject to audit.

Trade union contributions are paid by the members into their local branches and expenditure may be handled either by the local branches themselves or by head-quarters. Sometimes part of the expenditure is paid out by local branches and part by head-quarters.

The general tendency is towards centralized control as it gives greater power to head-quarters and prevents money being frittered away in sectional or local disputes. Routine expenditure, however, such as sick pay or out-of-work donation is generally left to the branches since they can exercise greater discrimination and supervision in such expenditure.

The Shop Steward Movement

Originally the duties of a shop steward were those of a minor trade union official and involved examining membership cards within the factory or recruiting members for the union. During the Great War, the working of the arbitration provisions of the Munitions Act led to much industrial friction and in connexion with this the shop stewards came into prominence. Shop stewards' committees, workers' committees, vigilance committees or similar bodies were organized in the engineering, munition and certain other factories. The movement originated in the Clyde area, but afterwards spread to other parts of the country, and eventually the various local committees formed themselves into a 'National Workers' Committee Movement', which was continually in trouble, not only with the employers, but also with the Government and the official trade union movement. Leaning towards syndicalism, the movement was much influenced by Guild Socialist theories then current, but later it became more extreme. The shop stewards became especially prominent in the engineering trade, where skilled men were being required to teach their jobs to unskilled workers or to women, and it was largely in connexion with this problem of 'dilution' that the shop stewards came into prominence. Furthermore, the complicated wage awards which were introduced as the war proceeded led to constant misunderstandings and disputes in their application to particular factories. It was felt in the workshops that the ordinary trade union officials were too far removed from the daily problems of the factory to deal satisfactorily with them, and it seemed that the shop stewards were the obvious persons to deal with such questions. Trouble then arose with the trade unions when the workers themselves elected their shop stewards without consulting the unions, especially as the

shop stewards thus elected were for the most part young men who had little patience with the methods of official trade unionism. The workers realized the strength of their position in the essential war-time industries; new ideas of the workers' status were formed and there was a vague syndicalism current which aimed at the overthrowing of the capitalist system.

Eventually trade union officials were forced to realize that in some way the shop stewards' claims must be recognized, and, in 1918, an agreement was drawn up between the Engineering Employers' Federation and the Engineering Trade Unions, whereby the shop stewards were recognized by both sides as the official representatives of the operatives in the workshops. After the 1922 lock-out in the engineering industries, the engineering unions definitely incorporated the shop stewards into their own organization. With the return of more normal conditions, the movement died down, though for a time the idea of 'workers' control', brought into prominence by it, had considerable influence on the labour movement generally.

CHAPTER X

WAGE SYSTEMS

IN practice there is a great variety of wage systems since the amount of work done may be measured in various ways. Broadly, however, the systems may be divided into two main groups, namely, payment by time and payment by results. In time-wage systems, the remuneration is determined by the hour, day, or week, without direct reference to the amount of work done. Nevertheless, there is practically always an understanding that a certain amount of work is to be performed and workers falling below this minimum are liable to be dismissed.

In factories where time rates much higher than those usual for workers of the particular class are paid, it will generally be found that the workers are engaged on assembly work, the speed of which is regulated by the pace of the belt or conveyor. Without this incentive of high time-rates, workers might not be willing to work at the speed desired.

Sometimes even with time-rates, individual differences are found between workers, as those engaged on particularly difficult or highly skilled work, e.g. tool-room workers in an engineering shop, may be paid at a higher rate than the normal for their class. 'The superior bricklayer is seldom employed at the standard rate, but is always getting jobs at brick-cutting (or "gauge-work"), furnace-building, or sewer construction, paid for at rates from ten to fifty per cent above the standard wage. In all industries we find firms with special reputations for

a high class of production habitually paying, with full trade union approval, more than the trade union rate in order to attract to their establishment the most skilful and best conducted workmen.¹

In the Birmingham brass trades a system of grading workers into seven grades according to their experience and skill has been adopted. In numerous trades special allowances are paid where the work has exceptional features, examples being 'dirt money', where the work is disagreeable or dirty, 'height money', to workers on scaffoldings or chimney building, or 'lieu rates', paid to certain workers in the engineering trades, such as tool-makers or maintenance men who cannot easily be put on piece-rates.

In systems of payment by result there is, on the other hand, some connexion with the time worked even though individual wages vary according to output; the basis underlying the system being that the average worker should be able to earn the average remuneration of his class with average effort. The most general form of payment by result is that of piece-wages where the wage is directly related to the output of the worker since he is paid so much per unit, per dozen or per gross according to the system adopted. Variants are to be found in the premium bonus system where a bonus is paid when the output exceeds a predetermined standard.

In 'task-wages' a time is fixed in which a set piece of work must be performed. Sometimes if the fixed output is not attained a proportionate deduction may be made from the wages paid to the worker, but if it is exceeded, nothing extra is paid. This system, however, does not exist in organized trades, and is strongly opposed by trade unions. Generally the method followed in task-wage systems is to dismiss workers who fail to reach the standard set.

¹ S. and B. Webb, *Industrial Democracy*, pp. 283-4, 1920 Edition.

Time-wages are the most general system and time-work remains predominant in Great Britain, being favoured by many, though not by all trade unions. The great merit of the time-wage system is its simplicity. Also, it is the only feasible system in occupations where the duties are varied and where the work is not represented by the production of a definite commodity, as, for instance, in the case of most railway and transport work, domestic service, office work, hotel service, or the work of ships' crews, liftmen, watchmen or cattlemen. Time-rates greatly preponderate in the distributive trades, public utilities, municipal employments, building and woodworking. They are also the most suitable system where the quality of the work would suffer if it were rushed as, for example, in the skilled crafts, artistic work or delicate instrument-making.

The system assumes that the worker will give loyalty and fair service in exchange for his wage. Where supervision is adequate, and the worker reliable, this fair exchange is in practice secured.

Payment by result is very general in the textile industries, shipyards, engineering, the clothing industries, glass and pottery trades, while in coal-mining about forty per cent of the workers are on piece-rates. In some industries, payment by result might be said to be almost traditional, thus Professor J. H. Clapham in his *Economic History of Modern Britain*, speaks of the 'Engineers' Economy' of specialization and piece-rates being introduced in the period 1815-1848.¹

A comprehensive inquiry conducted by the Board of Trade in 1906, supplemented by a more recent inquiry in coal-mining, showed that approximately seventy-two per cent of the workpeople covered by the returns were on time-work, and the remaining twenty-eight per cent on some system of payment by result. Since 1906,

¹ Vol. I, p. 550.

however, there has been a definite tendency to adopt payment by result more extensively. It is notable that in the export industries, the proportion of piece-rate workers is considerably above the average.

In many industries the conditions of payment by result, are fixed by collective agreements which can only be modified in any particular factory within defined limits. Many unions, however, insist on a guaranteed time minimum and stipulate a minimum percentage above the time-rate which piece-rate workers should be able to earn.

Some employers, though they guarantee a basic time-rate, adopt a 'debit system', whereby any deficiency in actual piece earnings below the time guaranteed wage for the week is booked against the worker and has to be made good out of subsequent earnings. This, however, is not a good system, as it tends to destroy the worker's incentive which, after all, is the *raison d'être* of piece-work.

District Variations in Wages

Considerable variations in wage-rates often occur as between different towns and districts; the London rate generally being the highest. This is a well-recognized practice, and is based mainly on presumed differences in cost of living. In London, for example, rents are higher, and travelling involves greater expense than in a country town. Thus we find in the building industry that the Joint Council in 1934 fixed wage-rates at 1s. 7d. an hour for craftsmen, and 1s. 2½d. for labourers in the inner London area; and in the outer area at 1s. 6½d. for craftsmen, and 1s. 2d. for labourers. In Grade A towns the craftsman's rate was 1s. 5½d., and the labourer's rate 1s. 1½d., and the scale descended through eight other grades by a halfpenny an hour for craftsmen, and by either a halfpenny or a farthing for labourers. The lowest rate was 1s. 1½d. for craftsmen, and 10½d. for

labourers. Sometimes the differences in district rates of wages are to be explained by differences in the type of work undertaken in different areas.

Cost of Living Sliding Scales

During the Great War, sliding wage-scales, varying according to the cost of living as measured by the Ministry of Labour's Cost of Living Index Number, were adopted in a great variety of industries in order to provide automatic adjustment of wages to changes in the cost of living so that continual disputes owing to rapidly changing retail prices might be obviated. In 1933 the Ministry of Labour estimated that the number of workpeople whose wages were subject to adjustment by cost of living sliding-scales was about 1,250,000 having been reduced by about half since 1925. In many industries, however, the scales were not being applied in practice, and if these were excluded there were in 1933 only between 750,000 and 1,000,000 whose earnings were in fact regulated according to the cost of living.

During periods of rapidly changing prices, cost of living sliding-scales have obvious advantages in preventing continual friction, but in more normal times their advantages are not so great as they tend to make working costs too rigid from the employer's point of view, and from the workers' they tend to prevent the advantages of falling prices being attained; obviously in a progressive economy the worker should share in technological improvements through greater cheapness. Cost of living sliding-scales, it should be noted, are not to be confused with sliding-scales based on the wholesale price of the commodity produced by the particular industry. At one time such sliding-scales were popular in industries, especially those engaged in the export trade, such as the coal, iron or steel industries, in which wage-costs were a large item in cost of production.

Provision of Tools or Materials

In certain trades, it has been the custom for workers to provide their own tools, e.g. skilled engineering fitters or cabinet-makers, or to provide materials, e.g. explosives in mining. Among building craftsmen the former practice is general, though the custom of the trade in this respect varies from district to district. In some districts custom prescribes in detail which tools are to be provided by the masters and which by the workers respectively, and also the arrangements for the sharpening and repair of the workers' tools. Labourers generally provide a shovel, particularly outside London, while in some country districts they have also to provide a pick. Brick-layers and plumbers provide all hand tools and in the case of the former the kit may cost up to £5. Joiners provide the largest kit of all, and the value of a good tool kit for a joiner working both at the bench and outside costs from £20 to £30 or even more.

Certain large employers are, however, now providing complete tool kits for their workers, notably the gas companies and the post office engineering department.

Various Systems of Payment by Result

The principle of ordinary or straight line piece-work is very simple since the worker is paid at a flat-rate for every operation or group of operations performed, and the wages received are strictly proportionate to output. Repetition work lends itself especially to piece-rates as, for example, in textiles or mass-production assembly work. Where the jobs are numerous and complicated, elaborate systems have been built up for fixing and maintaining piece-work prices. In some organized industries a standard price list is agreed between employers and the trade unions concerned, which sets forth in detail the piece-work price to be paid for all jobs regularly performed in the industry. The outstanding example

of the standard price-list method is the cotton textile industry.

In those trades where jobs are not of a repetitive character or where different methods are adopted by firms engaged on similar work, as in the engineering industry, the method of fixing piece-rate prices for individual jobs in particular factories by mutual agreement between the employer and the workers is sometimes adopted. This is often called the principle of 'mutuality', and has been embodied in an agreement in the engineering industry though it is provided that the worker's day-rate be guaranteed.

Straight piece-work rates are simple and cheap to operate, they are easily understood by the workers, and labour costs are in direct relationship to production.

Collective Piece-work

Sometimes the nature of a job may be such that payment by result is only possible if a number of workers share collectively in the proceeds. Sometimes several men may be working together to achieve a certain result, e.g. loading railway wagons, assembling parts of a machine, dyeing woollens, or otherwise working in squads. In riveting squads in shipyards, for instance, three classes of workers are involved—riveters, holders-up and labourers. The labourers are paid at a time-rate, but riveters and holders-up share in a piece-rate.

There are many such jobs which must be done collectively, but it is often impossible to say how much has been done by any individual worker, though it is relatively easy to measure the amount of work done by the group as a whole. In some engineering shops where standard units are produced a bonus on output based, for example, on tonnage produced, has been introduced and this bonus is divided out among all the workers concerned.

Sometimes workers agree to 'pool' their piece-earnings

themselves, and this 'fellowship piece-rate work' is often practised, but being purely voluntary, the groups readily form and dissolve and are of varying size. Sometimes it is practised by a whole shop or department, sometimes but by two or three workers.

Bonus Systems

Bonus systems like piece-work may be either individual or collective, that is a bonus on output may be paid to an individual, or a collective bonus may be paid to a group of workers on their aggregate output.

The collective bonus may extend to a whole shop as was the practice adopted in certain munition factories during the war, the bonus being determined by the excess of output of the whole shop over the normal output in a previous period. Group bonus systems have been advocated where it is difficult, as in railway working, to adopt a piece-rate system. In railway goods-shed working, a bonus is sometimes paid to the loading and unloading gangs for each unit of work performed above a definite minimum. The best measure has been found to be 'hundredweights dealt with per man-hour'. Other units, such as 'consignments handled' or 'wagons loaded' might, of course, be taken as the basis, but the former is not very suitable since packages differ so much in size and weight, while if the latter were adopted, insufficient loading or careless stowing might result. Generally the bonus does not commence until a certain minimum tonnage is handled but this minimum must not be set too high or the incentive will be lost. The minimum weight might well be based on the normal amount of traffic handled during the week by the gang, and for every additional ton loaded or unloaded a bonus of say, 9d. per ton might be distributed among the members of the gang. In special circumstances such bonus schemes may justify themselves even if there is no direct saving

in cost, e.g. quicker loading might obviate the necessity for expensive extension of goods sheds. In calculating the advantage of a bonus scheme it is, of course, necessary to allow for the cost involved in more careful supervision. Bonus schemes have also been introduced to some extent in connexion with carriage cleaning, cattle-wagon cleaning, marshalling yard working, loading of coal and the operation of 'pick-up goods trains'. Thus in one scheme of the last mentioned type a bonus of threepence each is paid to the driver, fireman and guard for every quarter-hour by which they reduce their over-all time. The company hope to gain by a reduction in engine time.

In some industries a bonus is paid to workers in respect of any savings which they may effect in materials or maintenance costs over some average predetermined figure. For example, motor-vehicle drivers may receive a bonus on savings effected in petrol consumption or tyre maintenance.

As regards individual bonus payments, there is an almost infinite variety of systems in operation. The simplest type is that in which the bonus begins when a specified output is reached. Up to this the worker may be paid either on a time-rate or on straight piece-work rates. No bonus is paid until the given task has been accomplished, but beyond that a certain bonus, either in the form of a lump sum or calculated per piece of extra output, will be given.

Premium Bonus Schemes

In these schemes, the employer fixes a standard time in which a job ought to be done. If the job is performed in less than the standard time, the worker receives a bonus proportionate to the time saved, over and above his standard time-work wage. The effect of this method is that the worker gains increased earnings as his output increases, but not in direct proportion to the increase

of output. Obviously a most important feature of the system is the correct fixing of the standard time.

A great variety of premium bonus systems is in operation especially in the engineering trades where the system was accepted, subject to certain safeguards, by the unions on a national basis in 1902.

One of the earliest systems is the differential piece-rate system advocated by F. W. Taylor in the U.S.A., who introduced it in 1884 for repetition work. Essentially the system consists in having two piece-rates, one much higher, perhaps half as high again, than the other. Below a certain level of output, the lower rate is paid, but once the worker accomplishes his task, the higher figure is paid for all his output. Thus the slow worker is severely penalized while the fast worker is rewarded. No time-rate was guaranteed, and the system involved a very careful choice of the standard of production which divided the two rates, since there is a big increase in payment when the set standard of production is attained. Taylor's aim was to stimulate first-class workers by providing a generous return if the high rate of output were achieved. It has never become popular among employers, and it is generally disliked by the workers.

A modification of Taylor's differential piece-rate system which gives some incentive to the average workman, is that of H. L. Gantt whose 'task and bonus system' introduced in 1901 mitigated the severities of the former method. An hourly rate was guaranteed, irrespective of output with a bonus of commonly thirty per cent on the task price when output reached that of the standard task. This system gave a guaranteed minimum below which the workers' wages would not fall, but like Taylor's system it provided a sharp jump in wages once the standard set was attained.

A more complicated system is that of Harrington Emerson, in which the worker's efficiency is measured

by dividing the standard time allowed for a job by the actual time taken. Day wages are guaranteed and if the worker's efficiency exceeds 66½ per cent, he receives a bonus, which increases as his efficiency increases.

One of the best-known schemes of premium bonus is the Halsey Premium, first described by Mr. F. A. Halsey in 1891 to the American Society of Mechanical Engineers. In this scheme, the worker is guaranteed the customary day rate. Then standard times are fixed by a special rate-fixing department in the factory and inserted on all instruction cards issued to the workers. A premium bonus amounting to one-third or one-half of the time saved is paid when the job is performed in less than the standard time. If he exceeds the standard time he receives time wages for all the time worked by him, for the Halsey system carries with it a guaranteed time wage. To take a practical illustration: suppose the day rate is 1s. 4d. per hour and that five hours is the standard time allowed for the particular job; the premium bonus being at the rate of one-half of the value of the time saved. If a man takes six hours, he receives 8s. and no bonus, i.e. 1s. 4d. per hour. If he takes five hours he gets 6s. 8d. and no bonus, the rate being still 1s. 4d. an hour, but if he does the job in four hours he gets 5s. 4d. plus one-half of the value of the time saved, namely 8d. Altogether he is paid 6s., that is, 1s. 6d. per hour.

The advantage of the Halsey Premium Bonus System and the similar Weir Bonus System introduced by the Glasgow firm of G. & J. Weir in 1897, is first of all simplicity. It can easily be understood by the workers and the amount earned is readily calculated and checked. The system recognizes the principle of increased pay for increased work, but the worker does not get such largely increased wages as he would on straight piece-rates. It is, therefore, not so hazardous an experiment as would

be the ordinary piece-rate method, where a manufacturer has no previous experience of the particular job. 'Rate cutting' has been associated much less with the Halsey premium than with piece-rates, and this has had the effect of establishing better relations between employers and employees.

A modification of the Halsey system is the Rowan Premium Bonus System introduced in 1898 by Mr. James Rowan, a partner in the Glasgow Marine Engineering firm of David Rowan & Co. In this system which has been extensively applied in engineering, the premium is not a fixed fraction of the value of the time saved, but is calculated by multiplying the time saved by a variable factor, namely

$$\frac{\text{Time taken}}{\text{Time allowed}}$$

$$\text{Thus the premium} = \text{time saved} \times \frac{\text{Time taken}}{\text{Time allowed}}$$

It follows that if the worker saves a quarter of the time, he is paid time and a quarter. If he saves half the time, he is paid time and a half and so on. Under this system the man can never earn double wages, and it thus tends to prevent too wide discrepancies in individual earnings, which might become a source of dissatisfaction among the men in the workshop. The system also tends somewhat to minimise the effect of errors in rate setting. It is suited to factories where accurate time setting is difficult to achieve and where work of a varied character is undertaken. On the other hand, it is less advantageous in factories where there is a large proportion of intensive repetition work.

The old-established Halsey, Weir and Rowan Bonus Systems are declining in favour and other systems designed to suit the special circumstances of individual firms are being adopted instead. Rate-fixing is now more accurate and precise than it was in the past, owing largely to the increased adoption of batch and mass production.

The tendency is to adopt systems of payment which correspond closely to production.

Among recent systems that known as the Bedaux System, introduced by Mr. Charles Bedaux, has attracted much attention during recent years. This is more than a system of payment by results, since the Bedaux Company, sends their representatives to the firm concerned to investigate production methods with the object of suggesting improvements. The Bedaux Company claims that all human effort may be measured in terms of a common unit made up of a combination of work and rest. The Bedaux unit, called 'B', is the amount of work which can be performed by a man of average ability when working under ordinary conditions at his normal speed and availing himself of the full measure of permitted relaxation. This means that normal production is sixty units an hour for every individual in the factory. Output in excess of sixty units an hour secures extra payment, though generally only three-quarters of the additional units are credited to the individual worker; the remainder being pooled and divided out among indirect workers. The Bedaux System necessitates very careful time studies, and precise measurement of effort and output. The system, however, has met with considerable opposition from organized labour.¹

Producers' Co-operative Societies

The co-operative workers' society or producers' co-operation attempts to solve the problems of industrial relations by eliminating the employer. The workers are self-employed; they take over all the responsibilities of production and borrow capital according to their needs. The members of a workers' co-operative society hope to divide among themselves the profits they see going

¹ For an account of the Bedaux System see M. L. Yates, *Wages and Labour Conditions in British Engineering*, pp. 83-85

to the employer and to obtain control over production. This type of co-operation has made a strong appeal to social reformers and its advocates have included Robert Owen, John Stuart Mill, Charles Fourier, and the Christian Socialists.

A striking fact about these societies is that their formation has often been accelerated by trade depression, e.g. in France and England round about 1848 and in Italy in 1880.

The co-operative production societies, apart from the co-operative wholesale societies which are adjuncts of the consumers', not the producers' movement, have not achieved any great degree of success, despite the confident hopes of John Stuart Mill and other economists. Mill, indeed, thought that this 'form of association . . . if mankind continue to improve, must be expected in the end to predominate.' He also spoke of the 'brilliant future reserved for the principle of co-operation.'¹

In Great Britain the producers' movement first obtained a stimulus from the teachings of Robert Owen and it was greatly assisted by the Christian Socialists in 1848, though by 1854 it became apparent that the self-governing workshops established by the Christian Socialists were a failure. Workers' societies, however, continued to be formed in small numbers and some survive to the present day. Their greatest success has been in the printing and allied trades, the boot and shoe trade, the metal trades, and textiles.

In France, the first society was founded as early as 1834 by Buchez, while round about 1848 over 200 societies were established largely owing to the influence of the writings of Louis Blanc. Most of these eventually failed. About 1866-7 more societies were formed and in 1912 there were said to be about 500 in existence. Many of them, however, employed auxiliary hired

¹ *Principles of Political Economy*, Ashley's Edition, pp. 772-3 and 782.

labour as, for example, the lunetiers or spectacle-makers of Paris, or Godin's Stove Manufactory in Guise, and were thus not fully co-operative, being rather partnerships of small employers.

In Italy, successful societies have been formed from time to time, especially in 1880, which was a year of great industrial distress. They have been largely confined to skilled industries, such as printing, pottery or glass-making, though a peculiar feature of the movement in Italy has been the success achieved by self-employed labour gangs—called 'Labour and Public Service Societies'—which have engaged in carting, kerb-laying, ship-breaking, varnishing or clearing away snow in the winter months.

Though the history of co-operative production has not recorded many outstanding successes, it has achieved a limited success. C. R. Fay in his *Co-operation at Home and Abroad*, puts forward a moderate plea for its achievements. 'It does not claim that it has a general economic superiority, but rather that in the fields congenial to it, it is capable of holding its own; and that where it is financially successful it has also dignified and strengthened the position of the workers by introducing them to the brainwork of management and responsibility.'

The limited achievements of the movement must be set down to the fact that modern factory production—necessitating as it does, considerable capital and skilled management—does not appear to be well-suited to small groups of self-employed producers. The great difficulties have always been those of securing adequate capital, obtaining suitable managers, maintaining shop discipline and of marketing the products. F. A. Walker was of the opinion that four conditions must be fulfilled if success is to be achieved, namely:

- (a) The industry should be one which can be carried on by a small number of workers.

- (b) The workers should be substantially on the same level as regards skill and strength.
- (c) The initial outlay on tools and machinery should be small.
- (d) The goods produced should be such as can be sold in a local market.

A modification of the workers' co-operative society has been suggested by H. Dubreuil in *La République Industrielle*, whereby workers would themselves organize co-operative groups or teams, internally self-governing but capable of co-ordination within the framework of the business utilizing their services, by means of collective contracts for specified work negotiated between the management of the firm and the delegate of the workers' team.¹

Holidays with Pay

During recent years there has been a very marked movement towards holiday payments to wage-earners, and in many countries the grant of such holiday remuneration is now compulsory, e.g. in Belgium, France, Norway and Eire.

Annual holidays with pay for salaried employees have been the rule for something like eighty years, but it was not until the beginning of the century that paid holidays for wage-earners were introduced in a few industries, notably the railways, public utilities and newspaper printing. The distinction in treatment as between salaried and wage-earning employees is, no doubt, to be explained by the fact that salaried employees are remunerated by an annual inclusive salary as against the hourly or weekly employment of wage-earners, and the former are not generally paid for overtime. Salaried employees are usually few in number compared with the number of wage-earners; holidays are usually taken in rotation and the work is done by the others.

¹ See article by R. J. Mackay in *The British Management Review*. Vol. III, No. 3, pp. 122-127.

During the Great War, the number of collective and individual agreements, relating to paid holidays, increased considerably and by 1925 it has been estimated by the Ministry of Labour that approximately one and a half million manual wage-earners were covered by collective agreements providing paid holidays, while in 1938 a similar estimate put the number at three millions.

In addition, large numbers of clerks, shop assistants and other salaried employees were regularly granted paid holidays, as were many other workers on 'standing wages,' or employed by firms not parties to collective agreements. The cost of a week's annual holiday is about two per cent of the annual wage bill, though some firms, in addition, pay their workers for six public holidays each year. Sometimes the duration of the paid holiday is determined by length of service and in some firms the payments are reduced if the worker's attendance or timekeeping has been unsatisfactory. This latter system is not altogether to be recommended, as it may cause dissatisfaction and there are other and more satisfactory methods of promoting punctuality and regularity.

In 1937, a committee under the chairmanship of Lord Amulree was appointed by the Minister of Labour on the subject of Holidays with Pay. This committee reported that 'the evidence tended to show that the need for holidays arose partly from questions of health and efficiency and the abatement of industrial fatigue and partly from reasons of a broad social character connected with the development of human personality.' The committee were of the opinion 'that the time is opportune for more active steps to encourage the taking of holidays by employed workpeople in this country'. They recommended that statutory bodies, such as trade boards or agricultural wages committees, for the regulation of minimum rates of wages should be empowered

to prescribe paid holidays, and this recommendation has since been implemented by the Holidays With Pay Act, 1938, which also enables the Minister of Labour to assist the administration of voluntary schemes in other industries. The Road Haulage Wages Act, 1938, granted powers to the Road Haulage Central Wages Board to fix 'holiday remuneration'.

In the agreements already in existence, payment is generally made to time-workers at the full weekly rate, and sometimes piece-workers are also paid on this basis. Certain firms calculate the amount payable to piece-workers on an average of their earnings over the preceding month, six weeks or year. A few of the agreements require contributions from the workers towards payment for holidays, and in the boot and shoe industry, for example, equal contributions are made by employers and workpeople. London typefounders work fifty hours a week but are paid for forty-eight, the difference being paid out at statutory holidays and for one full week's holiday.

Some of the agreements, e.g. that relating to London bus drivers and conductors, provide that the holiday period shall fall within certain months of the year.

In certain firms, various holiday arrangements are made such as the provision of holiday savings funds, or holiday camps or tours, including visits abroad. Weekend camps or excursions are organized by some firms, especially for youths, and the arrangement of these is facilitated where a five-day week is worked or where the workers have a whole Saturday free once a month.

CHAPTER XI

REGULATION OF WAGES BY THE STATE

THE most important and far-reaching intervention by the State in this country as regards control of wage-rates, is that provided by the trade board system, which provides for the fixation of minimum wage-rates in certain industries or trades.

The first trade boards in Great Britain were set up by the Trade Boards Act, 1909, which came into operation on 1st January, 1910. The Act applied only to four trades mentioned in the schedule, namely: (1) Ready-made and wholesale bespoke tailoring, and any other branch of tailoring in which the Board of Trade considered that the system of manufacture was generally similar to that prevailing in the wholesale trade; (2) The making of boxes or parts thereof made wholly or partially of paper, cardboard, chip or similar material; (3) Machine-made lace and net finishing and mending or darning operations of lace curtain finishing, and (4) Hammered and dollied or tommied chain-making.

The Act was thus largely experimental, but it was provided that the Board of Trade might make Provisional Orders applying the Act to other trades, if it were satisfied that the rate of wages prevailing was exceptionally low as compared with that in other employments. It was also provided that if the Board of Trade considered at any time conditions of employment were so improved as not to necessitate a Trade Board, it could make a Provisional Order that the Act should no longer apply to that trade.

The object of establishing trade boards was to improve wages in sweated trades. During the years 1885 to 1909 public opinion was strongly moved by revelations concerning sweated conditions in certain industries, particularly box-making, chain-making and certain sections of the clothing trades. The Report of a Select Committee of the House of Lords on the Sweating System in 1890 and later an exhibition organized in 1906 by the *Daily News* and the subsequent formation of the Anti-Sweating League, focused attention on the gross evils of the conditions that existed in these industries. Wages were miserably low and young children worked long hours in bedrooms and kitchens, the floors littered with match-boxes or paper bags or other articles which were being made. In describing a Glasgow paper-bag maker's home, it was stated in the Report of the Chief Inspector of Factories in 1905, that 'No trade is more disturbing to the home. The paste seems to find its way everywhere. Nothing could exceed the misery and squalor amongst which the work was done. The whole of the available furniture, including the bed, was covered with damp bags, some hundreds of which had to be removed in one home before I could be shown the baby.' For making the bags, by no means of the smallest size, the wages then paid were 3d. to 5d. a thousand.

To quote from the 1890 Report of the House of Lords Select Committee on the Sweating System, the conditions of these trades involved 'earnings barely sufficient to sustain existence; hours of labour such as to make the lives of the workers periods of almost ceaseless toil, hard and unlovely to the last degree, sanitary conditions injurious to the health of the persons employed and dangerous to the public.' Another Government Committee which investigated home-work came to the conclusion in 1908 that 'sweating' prevailed extensively, not only among home-workers, but also among factory-

workers in trades in which home-work was prevalent, and the committee was convinced that only legislation could remedy the evils.

British Trade Board legislation applies to all workers, men and women alike, and regardless of the place where they work, whether it be at home, in a workshop or in a factory. It was never intended to regulate home-work only, or to confine regulation to women workers, though at first the industries regulated were those in which there were large numbers of women home-workers. Chain-making was largely localized around Cradley Heath and there home-work and out-work were common, hammered chain being made almost exclusively by women and the dollied or tommied chain by men.¹

Lace working was also to a large extent localized and many of the processes were performed by women home-workers. Likewise in box-making and tailoring, a considerable number of women were employed on home-work.

In 1914, trade boards were established in four more trades, namely, shirt-making, sugar confectionery and food preserving, tin box making, and hollow ware trades.

In 1918, a new Trade Boards Act greatly extended the system, partly in order to implement the proposals of the Whitley Committee and partly in order to prevent any sudden post-war fall of wages in semi-skilled and unskilled occupations, especially amongst women whose wages had been covered by Munitions Orders and the Wages (Temporary Regulation) Act.

Under the 1918 Trade Board Act, trade boards can be set up having regard to the actual rates of wages

¹ Hammered chain is made and shaped solely by the use of the hammer. In making dollied chain an iron tool is brought down by hand upon the link after it has been welded, or by pressure of the foot upon a treadle in the tommied variety. It would seem that it was the necessity of being able to keep the dolly or tommy in repair, which caused this to be the men's branch of the trade.

prevailing in the trade, if it is shown that no adequate machinery exists in the trade for the effective regulation of wages. The Act, therefore, is more than an 'anti-sweating' Act, though in practice regard has been had to wages and most of the boards set up under the 1918 Act could have been established under the terms of the 1909 Act. In 1938 there were forty-nine trade boards in existence covering a great variety of industries, including aerated water manufacture, boot and floor polish making, boot and shoe repairing, brush and broom making, flax and hemp manufacture, cotton waste reclamation, general waste materials reclamation, hat, cap and millinery trade, laundry work, making-up of textiles, rope, twine and net manufacture, milk distribution, sack and bag making, tobacco manufacture and toy-making. Of these forty-five had been set up before 1922, when the report of the Cave Committee recommended caution in regard to the establishment of further trade boards. Since that date and up to the end of 1938, only four new trade boards were established, namely, fustian cutting (1933), cutlery (1933), bakery (1938), and the rubber manufacturing trade (1938).

Trade boards are statutory institutions, and thus differ from other wage-negotiating bodies in this country; the members are appointed by the Minister of Labour (formerly by the President of the Board of Trade), and their decisions are legally enforceable. The main function of a trade board is to fix minimum rates of wages, though it may be required to advise Government departments on the question of industrial conditions in the trade, and it may make recommendations to Government departments. Under the Holidays With Pay Act, 1938, trade boards have power to make provision for a week's paid holiday a year.

The average number of members of a trade board is about forty, and of these, three are 'appointed members'

not connected with the trade in any way. The other members are selected in equal numbers from among employers and workers in the trade. The duty of 'appointed members' is to act as mediators or conciliators, and they should endeavour to promote agreement among the others. All members are nominated by the Minister of Labour, generally from names sent in by employers and workers respectively.

The boards are required to fix a minimum rate of wages for time-work, known as a 'general minimum time-rate', though in addition, if they so desire, they may fix rates for piece-work and overtime.

The time-rates, when fixed and confirmed by the Minister of Labour, are legally binding and they must be paid as the minimum for all the time the worker spends in the factory, whether actually engaged on work or waiting for materials, steam-pressure or otherwise.

Where no general minimum piece-rates have been fixed the employer is required to show that the piece-rates which he pays would yield to an ordinary worker in the circumstances of the case, at least, the same amount of money as the basic rate. This rate is either the appropriate general minimum time-rate or a rate specially fixed by the board for the purpose known as the piece-work basis time-rate.

Lower rates may be fixed for learners and permits can be issued, after individual inquiry, to workers unable owing to infirmity or physical injury to earn the ordinary minimum.

To illustrate the actual rates which have been fixed, the Fustian Cutting Trade Board established in 1933, may be taken as an example. At its first meeting, this board prepared a general minimum time-rate of 7d. an hour for adult female workers engaged in power-machine cutting, and a piece-work basis time-rate of $7\frac{1}{2}$ d. an hour. For hand-cutting, the rates proposed were $5\frac{3}{4}$ d. an

hour for female workers, and 10*d.* an hour for male workers.

The rates vary considerably from trade board to trade board, and in October, 1936, for adult female workers they ranged from 5*1*/*2**d.* per hour in fustian-cutting or 6*d.* in flax and hemp to 9*5*/*8**d.* in tobacco manufacture, and 10*1*/*2**d.* in boot and shoe repairing. For adult male workers they ranged from 9*3*/*8**d.* per hour in jute, 9*3*/*4**d.* in made-up textiles to 1*s.* 2*1*/*2**d.* in boot and shoe repairing, and 1*s.* 3*3*/*8**d.* in tobacco manufacturing.

As regards the enforcement of trade board decisions, this is carried out by a special staff of inspectors appointed by the Ministry of Labour. The Acts provide penalties for employers who fail to pay the minimum rates or commit other offences, such as failure to keep records or to post notices. The Balfour Committee on Industry and Trade stated that generally 'there is little difficulty in securing compliance among the larger employers, and that the great majority of workers employed in trade board trades receive at least the minimum. Among the smaller employers, compliance is certainly deficient, but this deficiency is less serious as it affects a comparatively small number of workers'.

Other machinery for State Regulation of Wages

Apart from trade board regulation, four other industries in Great Britain are regulated by special acts for fixing minimum wages, namely, agriculture, coal-mining, the cotton textile industry and road haulage. Agricultural labour is notoriously lowly paid and is largely unorganized. The Corn Production Act, 1917, in addition to regulating cultivation, provided for the establishment of an Agricultural Wages Board with power to fix legal minimum wages for England and Wales. Modifications were introduced in 1921 when district wages committees superseded the national board, and

the wages so determined were only legally binding if the particular committee for the area exercised its right to secure their registration. This system was not very effective, and was superseded in 1924 by the Agricultural Wages (Regulation) Act. Under this Act, about fifty agricultural wages committees have been set up, one for each county or group of counties in England and Wales (Scotland being excluded¹), and each committee is required to fix minimum wages for time work in its area and may also fix minimum piece-rates and overtime rates. When the rates are confirmed by the Central Agricultural Wages Board which acts as a co-ordinating agency, they are legally binding in the area. The committees are somewhat similar to trade boards in their constitution, as they consist of representatives in equal numbers of employers and workers together with two impartial members appointed by the Minister of Agriculture and a chairman elected by the committee.

The Act differs from the Trade Board Acts in that the basis for fixing wages is indicated and they are to be such as will be 'adequate to promote efficiency and to enable a man in an ordinary case to maintain himself and his family in accordance with such standard of comfort as may be reasonable in relation to the nature of his occupation'. In the Trade Board Acts no indication is given as to the principles to be applied in fixing minimum wages.

The Coal Mines (Minimum Wage) Act, 1912, was passed after a six weeks' strike, and provides for a

¹ In 1936 a Committee with Lord Caithness as chairman was appointed by the Secretary of State for Scotland to review the conditions of employment and wages of Scottish farm workers. In their Report this Committee showed that wages were lower in Scotland than in England; for example, they stated that the average cash wage of married ploughmen in Scotland was 26s. a week, while the average wage of horsemen in England was nearer 36s. a week. They recommended that twelve District Wages Committees and a Central Wages Board should be established in Scotland.

minimum wage to underground workers unless excluded from its scope by old age or infirmity, or as a result of non-compliance with the conditions regarding regularity and efficiency of work. Minimum rates were to be fixed for each district by a joint district board, but no penalties were prescribed for non-compliance, presumably because the workers were very well organized in this industry and could look after themselves. During and since the war, the minima have not been kept up to date, and the rates fixed by collective bargaining have been higher in most districts than those fixed in accordance with the Act.

The Cotton Manufacturing Industry (Temporary Provisions) Act, 1934, aims at giving legal sanction to collective bargains made between trade unions and employers' associations. When an agreement has been negotiated in the cotton manufacturing industries the parties may make an application to the Minister of Labour asking him to make a statutory order. If he is satisfied that the organizations represent a majority of looms or a majority of persons in the grades of labour affected, he must appoint a board consisting of three neutral persons to consider and report on the application. Each party may appoint six assessors to sit with these three members of the board. The board is not to recommend the making of an order unless it is unanimous, but if it is, the Minister may make an order setting out rates of wages, conditions of earning, methods of calculation or the like.

Under Part I of the Road Haulage Wages Act, 1938, the Minister of Labour was empowered to establish a Road Haulage Central Wages Board for Great Britain, and Area Boards for each of the ten traffic areas in England, and one for Scotland. The Central Wages Board is empowered, after consultation with the Area Boards, to submit to the Minister of Labour proposals

concerning the remuneration (including holiday remuneration) of road haulage workers employed on 'A' licensed vehicles (i.e. public carriers), or 'B' licensed vehicles (i.e. limited carriers). The Minister can then make an Order imposing the proposed wages and working conditions as obligatory on all employers holding 'A' or 'B' licences under the Road and Rail Traffic Act.

Part II of the Act contained provisions relating to the remuneration of road haulage workers employed in connexion with a firm's own business ('C' licences). Any such worker or his trade union may make a complaint to the Minister of Labour that his remuneration is unfair and this the Minister is required (unless the complaint is frivolous or vexatious) to refer to the Industrial Court for settlement or in certain circumstances to a Joint Industrial Council. Remuneration fixed by the Industrial Court as a result of such a reference is known as 'Statutory remuneration', and is legally binding on the employer. The rate is applicable to all persons employed by that employer on the same work. Provisions in the Act also enable the remuneration to be reviewed at intervals of not less than three months.

CHAPTER XII

DEVELOPMENT OF ARBITRATION AND CONCILIATION

ELIZABETHAN legislation provided for the assessment of wages by Justices of the Peace, but by the eighteenth century such regulation of wages had fallen into disuse. The silk weavers of Spitalfield obtained special privileges by Acts of 1765 and 1773 which empowered Justices of the Peace to fix and enforce minimum wages, but these Acts were not extended either to the silk-weaving industry in other parts of the country or to other industries.

In 1800, the Government passed the Cotton Arbitration Act 'for settling disputes that may arise between masters and workmen engaged in the cotton manufacture in that part of Great Britain called England'. Disputes about wages in the cotton industry were to be referred to arbitrators appointed by the respective parties. The masters, however, managed to circumvent the provisions of the Act, so that in practice it was not of much effect. Under a general Arbitration Act, passed in 1825, Justices of the Peace on appeal from the contending parties might appoint mixed panels of masters and workers, from which the parties would select referees, and in the event of no decision being reached, the Justices might give a final award, but the Act was not effective and resort was seldom made to it.

In 1867, Lord St. Leonard, who was impressed by the success of the Conseils de Prud'hommes in France, secured the passing of an Act to facilitate the establishment of arbitration machinery in Britain, but this Act, like

Mundella's later Act of 1872, was unsuccessful in attaining the object desired.

Though legal facilities were not utilized, there were numerous attempts to set up private arbitration machinery in various industries. These were local negotiating bodies concerned with an industry in a particular town or locality, and it was not until later that national negotiating machinery was introduced for a whole industry throughout the country. In the nineteenth century the main problem of industrial relations was that of eliminating the numerous local strikes which often were of considerable severity and generated much ill-feeling.

In the 'thirties of the last century, a Committee of Conciliation was set up in the Potteries, but it was short-lived. There were also local committees in the printing trade, and in the Macclesfield silk-weaving trade an arbitration board was established for four years, 1849-53. In this last-named a Court of Arbitrators was set up consisting of twelve employers and twelve operatives, with an independent chairman. A detailed price-list was agreed upon and these wage-rates were rigidly enforced as minima. Employers contravening the agreed rates were first fined and then, if they proved obdurate, their operatives were encouraged to strike by the Court of Arbitrators.

In 1860, A. J. Mundella, a hosiery manufacturer in Nottingham, established the first really successful conciliation board. This industry had suffered from a long period of industrial friction, and earlier it had been prominent in the Luddite riots. Mundella took a keen interest in the welfare of the operatives and sympathized with their aspirations. The board, of which Mundella was elected chairman, consisted of an equal number of employers and workmen, but he soon saw that mere majority decisions were unsatisfactory and he made it his aim to secure that all decisions were arrived at by agreement. Thus the arbitration element became secondary,

and the board was definitely a conciliation board. For some twenty years it proved very successful, and agreed knitting piece-rates were established for some 6,000 separate articles. For several years there were no strikes in Nottingham, whereas formerly strikes and lock-outs were numerous. The board also did a great deal to reduce the evils of fluctuating wages and of indirect employment through 'middle-masters'.

The success of the Nottingham Board was largely responsible for the spread of conciliation methods, especially in the late 'sixties. Conciliation boards on similar lines were established in other industries, such as the Leicester and Derby Hosiery Trade, the Nottingham Lace Trades, and the Potteries. The most outstanding was that of the North of England Iron and Steel Trade, under the chairmanship of Sir David Dale. This Board was established in 1869, after a study of Mundella's methods, and was especially noteworthy in that it was concerned with a basic industry. It evolved a system of sliding scales of wages based on the price of iron, and this has remained a characteristic feature of wage adjustment in the industry.¹ The principle of the sliding scale was also adopted in some of the coal-fields, whereby wages were varied according to changes in the wholesale price of coal. Where adopted in these two industries, sliding scales worked well, as there is a close relation between wages and the price of the product, owing to the fact that wages are a main item in the cost of production of coal, iron and steel.

In the 'seventies, the conciliation movement spread to the Leicester Boot and Shoe Industry and made rapid progress.

¹ These scales should not be confused with the cost of living sliding scales of wages which were popular after the Great War. The latter provide for wage variations in accordance with fluctuations in the retail prices of articles which enter into working class budgets.

Another pioneer in promoting arbitration and conciliation methods was Rupert Kettle, a lawyer resident in Wolverhampton, who evolved a scheme for the building trades in his own city and in other Midland towns during the 'sixties.

Conseils de Prud'hommes

In France, councils for conciliation and arbitration, known as *Conseils de Prud'hommes*, for the settlement of disputes involving individual workers, were established by a Law of 1806, though actually they were a revival of earlier bodies abolished during the Revolution. The *Conseils* are permanent, elective bodies, consisting of at least six members, and an average of 30,000 to 40,000 cases a year have been dealt with by them. In 1892, their powers were extended to meet cases of dispute between employers and collective bodies of workmen, and they were also given powers to deal with strikes.

The election of members is conducted by the *maire*, or *préfet* of the particular town or district, and the principle followed is to obtain representatives from the various industries in the area, two from each industry, one being elected by the employers and the other by the workers. Their jurisdiction, however, only extends to trades which elect members and which are named in the decree instituting the particular *conseil*. Disputants are first invited to come before a *bureau particulier* and to explain their differences, so that if possible an amicable settlement can be reached, but should this fail, they are summoned before the *bureau général*, which arbitrates on the matter. Their work has consisted largely of settling disputes about individual wages, dismissals, apprenticeship, disputes between members of workers' associations and disputes between employers regarding such matters as trade marks, models and patterns. Similar organizations, it may be mentioned, are to be found in Belgium.

Organized Consultation between Employers and Employees

The essential feature of organized consultation between employers and employees is that there should be regular meetings of a board consisting of equal numbers of representatives of each side. Conciliation proceeds by the method of conference and frank discussion of difficulties. The two parties come together round the table to thrash out their differences and to try to convince each other by argument. The objective is the prevention of strikes or lock-outs, and the adjustment of disputed matters not by force, but by negotiation.

Conciliation differs from arbitration since in the latter some outside neutral person is called in to hear evidence from both parties and then to give a decision on the question at issue. Both sides pledge themselves beforehand to accept the arbitrator's decision, and they plead before him somewhat in the manner of a litigant before a judge in a civil case. Arbitration by its very nature is limited in scope and, therefore, conciliation has many advantages over it. Arbitration also is a more difficult procedure in that, unlike conciliation, it is generally only tried after a dispute has lasted some time and perhaps after attempts at conciliation have failed. Arbitrators' awards are less likely to be faithfully observed than decisions reached as a result of mutual agreement, and arbitration is not very suitable for adjusting disputes which turn on general questions, since the decision is likely to be unsatisfactory to one, if not to both sides. The arbitrator may have very little to guide him in the way of general principles and may have to fall back on the doubtful expedient of splitting the difference.

In a limited field, the method of arbitration has, however, proved very successful, and that is where disputes turn on questions of fact, not on general principles, and it is a very useful method of adjusting details when some general principle has been accepted by both parties.

Conciliation boards vary considerably in their nature. Some are permanent standing councils, but others are convened only for a special purpose, and after this is decided the board is dissolved. Obviously, the best means of securing industrial peace is a permanent conciliation board, meeting periodically to adjust differences as and when they arise. It is much harder to restore industrial peace after feelings have been embittered by a dispute than to preserve it before the dispute has gone too far. Continuous conferences tend to dispel distrust and make for better harmony because grievances can be ventilated before they assume serious proportions.

The method followed by all conciliation boards should be that of frank discussion of the problems and it is very desirable that decisions should be carried by a substantial majority, and if at all possible, unanimously. Representatives of either side must not regard themselves as mere delegates charged by their electors with the carrying out of a pre-determined policy. If they do, there will be little possibility of agreement. Mutual confidence is essential, but this may take time to establish.

Whitley Councils

During the Great War, a Government committee under the chairmanship of the Rt. Hon. J. H. Whitley was set up to consider the best methods of securing a permanent improvement in the relations between employers and employed. In their report, the committee stated they were of the opinion that the circumstances of the time offered a great opportunity for securing this aim, but they held that 'any proposals put forward should offer to workpeople the means of attaining improved conditions of employment and a higher standard of comfort generally and involve the establishment of their active and continuous co-operation in the promotion of industry'. To attain these objects, the committee proposed that in each

of the well-organized industries, there should be established a joint conciliation board, representing employers and employed and having for its object the regular consideration of all matters affecting the progress and well-being of the trade. They suggested that the boards should concern themselves with the industry on a national basis and that the representatives should be elected by the Employers' Federation and the trade unions concerned.

In addition, the committee recommended that joint industrial councils should be set up for particular regions charged with the discussion and adjustment of more local matters. Further at the base of the structure, they urged that works committees—consisting of representatives of the management and workers—should be established in each factory, not concerning themselves with general problems, but with questions connected with the particular factory. The report attached considerable importance to the formation of works committees since these would deal with matters affecting the efficiency of work and the daily life and comfort of the workers. They would enable employees to have some say in the management of their particular factory.

Further, it was insisted that the three forms of organization should be closely linked up with each other, and it was also suggested that the Ministry of Labour should act as a co-ordinating agency between the various national councils.

The Whitley scheme differs from earlier systems of conciliation in that it is a more complete and logical system.

The recommendations of the Interim Report dealing with organized industries were approved by the War Cabinet which instructed the Ministry of Labour to make the scheme as well known to the public as possible. In 1919, Whitley Councils were established in the Post Office and certain other branches of the Civil Service, as it was

considered desirable that the Government itself should give a lead to industry. Subsequently joint industrial councils were set up in a considerable number of industries including most of those which have had a long tradition of conciliation, such as the hosiery trade, paper-making, boot and shoe manufacture, printing, gas-making, the silk industry and the pottery industry.

Among other industries in which the councils have taken a strong hold may be mentioned cement manufacture, tramways, flour milling, wool and allied trades, electricity supply, quarrying, Scottish banking, the chemical industries, paint, colour and varnish trades, soap and candle manufacture, local authorities non-trading services (manual workers, England and Wales), Welsh plate and sheet trade, iron and steel wire manufacturing industry, wallpaper-making and match-making.

In quite a number of small industries, the councils have also been found to work well, e.g. packing-case making, needle and fish-hook industry, bobbin and shuttle-making industry, asbestos industry, carpet-making, cooperage industry, glove manufacturing industry, and gas mantle manufacture.

Between 1918 and the end of 1920, seventy-five Whitley Councils were established, and between 1921 and 1929, eight more were formed to which must be added two sectional trade councils and nine local councils making a total of ninety-four. Of this number, thirty have ceased to function. This may seem a poor achievement after the hopes which were aroused in 1918, especially as the coal-mining, engineering, cotton, and shipbuilding industries with nearly 3,500,000 workpeople have held aloof from the scheme. Yet, as a result of the experience gained, it is clear that failure to extend the system of joint industrial councils is not due to errors of structure or principle, but rather to human failure to make the most of the institutions in practice.

It was intended that the Whitley Councils should provide a means of discussing not only questions of wages and hours of work, but also other matters of interest to both the employers and workers in the industry. Among such matters that have been discussed by various joint councils are apprenticeship, training, education, welfare, unemployment, health and safety, workmen's compensation, restoration of trade, postal rates, transport, tariffs and collection of statistics.

The constitution of the councils is generally widely drawn, and that for the road motor transport industry (goods) provides: 'The functions of the board shall be to determine wages, hours and working conditions of labour, or to set up standard conditions under which such wages or working conditions may be determined nationally or otherwise, for the operative grades of workpeople employed in the road transport industry (goods). It may also discuss and make recommendations for promoting safety on the roads, for the health and comfort of the men employed, and for the efficiency of the industry, and in addition to any of the foregoing matters, take into consideration any legislative matter or make any representations thereon that may be of interest to the industry.'

Decisions of joint industrial councils are not legally binding, though they have in practice been generally honoured by the parties concerned. Frequently it has been advocated that decisions should be legally enforceable, and an attempt was made through an industrial council's bill to secure this, but the bill failed to pass. Of the sixty-four councils in existence at the time, only five opposed the bill and twenty-seven definitely favoured it. The advantage of legal enforcement is that it would standardize agreements throughout the industry concerned, whereas at present some employers or unions may not abide by the decisions. On the other hand, legal enforcement might cause active discontent and it

might well be that important questions might not be referred at all to the councils. Further certain employers' associations or trade unions might withdraw from the scheme altogether.

Industrial Arbitration

In Great Britain the State has encouraged resort to arbitration by various statutes. Thus the Conciliation Act of 1906 made available an arbitration tribunal consisting of a 'single arbitrator', appointed by the Board of Trade. This arbitrator sat as sole judge except in cases where the points in dispute necessitated the assistance of technical assessors. In 1908, Courts of Arbitrators were established which consisted of an employers' representative, an employees' representative and a neutral chairman, but the services of single arbitrators, especially those who had gained the confidence of the parties concerned because of their proved impartiality, were preferred, and comparatively few cases were referred to Courts of Arbitrators.

During the Great War, two special arbitration tribunals were set up by the Munitions of War Act, namely, the 'Committee on Production', and a special arbitration tribunal for women's wages. The Committee on Production consisted of three independent persons appointed by the Government, but later its form was changed so that it became constituted like the earlier Court of Arbitration, except that its members held office for a continuous period and were not appointed *ad hoc* for each dispute.

The Whitley Committee in their Fourth Report¹ considered the question of arbitration. They were opposed to any system of compulsory arbitration on the grounds that war-time experience had shown that it would not prevent strikes. They recommended the appointment of a *Standing Arbitration Council* on the lines of the temporary Committee on Production to which disputes could be

¹ Cd. 9099.

referred at the wish of the parties concerned. They considered that in addition it was desirable that suitable single arbitrators should be made available where the parties preferred this method of arbitration.

By the Industrial Courts Act, 1919, an arbitration tribunal called the Industrial Court was established on the lines suggested in the Whitley Report. Under Part I of this Act, a trade dispute may be reported to the Minister of Labour, who may take the matter into consideration and may take such steps as seem to him expedient for promoting a settlement of the dispute. If the parties concerned consent, he may endeavour to settle the dispute through arbitration. Where conciliation machinery is in existence, the Minister must first make sure that conciliation methods have been exhausted before resort is had to arbitration. This arbitration may be by means of a single arbitrator, by the Industrial Court, or by a special board of arbitration constituted of employers and workpeople with an independent chairman.

The decisions of the Industrial Court have been published annually, and these publications give not only a statement of the leading facts and the contentions placed before the Court, but also a statement of the grounds for the Court's decision.¹

By Part II of the Industrial Courts Act, 1919, the Minister of Labour is given power to inquire into the causes and circumstances of a dispute, either apprehended or existing, and if he thinks fit he may refer any matters connected with the dispute to a *Court of Inquiry*. This power was intended to be exercised by the Minister in cases where the interest of the general public was involved. Such a Court of Inquiry is not a Court of Arbitration, and there is no question of securing the consent of the parties directly involved.

¹ See M. T. Rankin, *Arbitration Principles and the Industrial Court*, and Lord Amulree, *Industrial Arbitration*.

CHAPTER XIII

METHODS OF PROMOTING ECONOMIC SECURITY FOR EMPLOYEES

PROBABLY the most striking change in the social outlook of the present day as compared with that of the nineteenth century is that in the last century the ordinary wage-earner was expected to provide for the maintenance and welfare of himself and his family in all contingencies. The conditions under which he worked, and provision for old age, sickness or unemployment, were matters for individual responsibility, and he had even to provide for himself if he were injured by an accident at work not due to the negligence of his employer. Voluntary benevolent funds were to be found only in a very few firms, and the sole responsibility accepted by the State was that of preventing actual starvation and destitution. If a man's misfortunes did not reach this limit, he had to endure them as best he could, except in so far as he could obtain temporary amelioration through the assistance of some charity.

In an earlier period, when the country was predominantly agricultural and before a class of landless agricultural labourers had arisen, the family unit recognized a wider responsibility, and on a farm there was often the possibility of finding at least subsistence for an unfortunate member of the family.

As industrialization developed, the economic security of the wage-earner became more precarious since unemployment was likely to occur from seasonal or cyclical

fluctuations in trade activity, from the effects of intensified competition or technical changes in production, or from changes in world trade.

During the past forty years, there has been some progress in developing schemes on the initiative of individual firms or specific industries which aim at improving the conditions of employment in this connexion or helping the wage-earner to tide over periods of domestic crisis. Such firms realize that a worker distracted by worry and uncertainty cannot be efficient, and that industry has certain responsibilities in the matter. To this end, they have devised pension and superannuation schemes, sickness and benevolent funds, savings schemes, holiday saving clubs, medical services, and even family allowance schemes. Some few firms have gone further and have placed their longer-service employees on a salaried basis, while in a large number of industries and occupations a guaranteed week is provided for all or the majority of the regular workers as on the railways or in road passenger transport. Among most municipal authorities and statutory companies, and in the Government services, employment is permanent and pensionable.

It is, however, in connexion with the part played by the State that an unprecedented advance has taken place since the close of the last century. Indeed, now there is hardly any aspect of the ordinary life of a wage-earner which is not substantially affected by social legislation. An extensive system of social insurance offers some measure of security against sickness, old age or unemployment, and on the death of the breadwinner offers some help to the widow or orphans. Compensation is legally payable should a worker be so unfortunate as to meet with an accident arising out of and in the course of his employment. Well over a million houses have been built either by local authorities or with the aid of Government subsidy between the Armistice and 1934, and working-

class rents were controlled when it appeared that they might have risen unduly owing to the post-war housing shortage. School life has been prolonged and teaching methods greatly improved while medical, dental and other health services are provided for children of school age. The asperities of the old Poor Law have been greatly reduced and public assistance and unemployment allowances are available on a more generous scale. Employment Exchanges facilitate the search for work while amenities such as public parks, library services, or adult educational facilities are now provided on a far wider basis than formerly.

Voluntary Schemes

(a) Savings Schemes

Savings schemes have been introduced by many firms either for specific objects such as holidays or house purchase or as a means of accumulating a lump sum to be paid out on retirement. The aim has been to encourage thrift among employees through the provision of a ready and easy method by which regular savings can be accumulated. The method generally adopted is that the employee authorises the firm to make weekly deductions of a specified amount from his wages; the authorization being necessary to prevent contravention of the Truck Acts. The details of the schemes in operation vary greatly, though generally the firm undertakes the administration free of charge. Very few firms add anything to the workers' contributions. Many of the schemes are operated under a trust deed and the deposits are invested in trustee securities, or alternatively, National Savings Certificates are purchased on behalf of the depositors. Some firms have adopted a system whereby stocks or shares in the company can be purchased by the workers on easy conditions of payment. An interesting type of thrift scheme is that of the Railway

Banks such as the North British Railway Bank. In this, the depositors must be employees of the company or wives or children of railwaymen. Interest is allowed to depositors on their daily balance for each complete pound deposited, and the total deposits which amount to about one million pounds are used by the Railway Company to finance their undertaking.

Another type of savings scheme is that devised to provide for funeral expenses. Among working class families, funerals constitute a heavy burden of expense, as there is a general tradition of elaborate or even extravagant funerals. Insurance is the only way in which this expense can be reasonably met, but the usual system—rather misleadingly called ‘industrial assurance’—is excessively costly, owing to the collectors having to make weekly house-to-house collections for small premiums of a few pence each and the conditions relating to the policies are not always favourable to the insurer. A vast amount of business of this kind is done by the 150 collecting societies and the fifteen insurance companies operating in this field, the premium income in 1935 amounting to well over £60,000,000.¹

There is no burial benefit in our system of National social insurance and a scheme arranged by a firm for its workers should provide considerably more favourable conditions than are possible under the usual house-to-house collection methods.

Yet another type of savings scheme is that which provides facilities for saving over a short period for some specific object, such as for holidays or Christmas festivities. Special schemes for such purposes are often arranged by firms.

The importance of encouraging a reasonable degree of thrift among wage-earners needs no emphasis since savings give a certain degree of economic security and

¹ cf. A. Wilson and H. Levy, *Industrial Assurance*.

can be drawn upon during the proverbial 'rainy day', or can be used as a means of providing for old age. It is not easy, however, for the majority of wage-earners to save more than very small sums at a time, because the margin available after necessary expenditure has been met is slight. Special facilities, therefore, are required which will provide for the regular investment week by week of small sums. It is by providing exactly these facilities that works savings schemes are valuable. They also serve to protect employees against unwise or speculative investment.

(b) *Sickness and Benevolent Schemes*

Sickness and benevolent schemes in industry have a long history and they formed part of the welfare work undertaken by early pioneers such as Ambrose Crowley or Robert Owen.

Many firms to-day have instituted sickness benefit schemes, most of these being based on weekly contributions by authorized deductions from wages, and membership in such cases is voluntary. It is usual for the workpeople to participate in the management where the schemes are contributory. Practice varies as regards the financial participation of the firm in the scheme, though invariably the firms bear the actual costs of administration. Some firms contribute nothing; others contribute sums up to as much as fifty per cent of the cost of sickness benefit. Wide variations are found in details such as age limits, amount of benefit or rates of contributions. A common rate of contribution for men is anything from about 4d. to 1s. a week and for women from 2d. to 6d. a week, while benefits for men may be anything from 10s. to 20s. a week with a reduced rate after thirteen or twenty-six weeks and for women from 8s. to 12s. a week. Generally, though not invariably, the amounts paid out in benefit are independent of anything which the worker may

receive under National Health Insurance or Workmen's Compensation. In some firms special schemes are in operation for hospital treatment, and these are often based on regular contributions of 1d. or 2d. a week, together with sums paid by the firm.

Sickness benefit schemes are a valuable factor in securing workers against the misfortunes of illness as the amounts available under the National Health Insurance schemes are inadequate to meet the needs of higher paid workers or workers with families, as there are no dependents' allowances and it is often during illness that money is most needed. If some such supplement to National Health Insurance benefit is not available, workers may have to seek public assistance for their families.

Benevolent schemes differ from sickness benefit schemes in that regular benefit is not paid at a fixed rate, but are designed to provide help in cases of personal misfortune, including sickness. The amounts paid out are related to the needs of the particular individual, and in calculating the help to be given, such matters as the financial circumstances of the individual and the number of dependents are taken into account. Some of the schemes are financed entirely by the firm concerned; others are contributory, but it is usual for representatives of the workpeople to take a large part in the administration of benevolent schemes.

(c) Unemployment Benefit Schemes

The national system of unemployment insurance has greatly reduced the necessity of providing unemployment benefit schemes on the part of individual firms. The number of schemes, therefore, in operation is small, probably about twenty, as far as can be ascertained, and the majority were introduced about the time of the 1921 depression. Sometimes, as in the scheme organized

by the Joint Industrial Council of the Match Manufacturing Industry, employers and trade unions are associated in the operation of the schemes. In others the fund is maintained by employers' contributions alone. In some of the schemes the main aim is to supplement earnings during short-time working which results from seasonal shortage of work. Many of the schemes also provide for payment of substantial dismissal benefits, if dismissal is due to lack of work or other causes beyond the control of the worker.

Such unemployment benefit schemes operated by industries or individual firms have the advantage of providing a definite incentive to the management to reduce the amount of unemployment which they create. The National system applying to all industries and occupations gives no direct encouragement in this direction and indeed, on the contrary, it has been used by some firms to enable them to keep a floating reserve of labour. At one time it was possible for individual industries to form special groups of their own within the national scheme, though only the Insurance Industry and Banking took advantage of this at the time, but there appears now to be little possibility of any development in this direction, as it would be feared that the secession of industries with good employment records might imperil the finances of the scheme as a whole.

(d) Industrial Pension Schemes

Considerable interest is now being taken by firms of various sizes in the possibilities of introducing pension schemes which would provide for the regular payment of life pensions on retirement from the service of the firm. Such pensions, of course, are supplementary to any Old Age Pension which beneficiaries may receive under the National Contributory Pension Scheme. According to an inquiry undertaken by the Ministry of Labour, the

total number of schemes—exclusive of Government departments or local authorities who contribute to retirement pension schemes for some or all of their employees—was about 6,600 at the end of 1936. The great majority of the schemes—namely, 5,000—applied, however, exclusively to administrative or professional classes or others engaged in managerial or supervisory duties, or to the clerical, sales and similar staffs. The number of schemes covering manual wage-earners was only 1,600. The total number of employees affected was approximately 1,617,000, of whom 803,000 were administrative and salaried workers, clerks, sales assistants, etc., and 814,000 manual wage-earners. Included in the totals were thirty-seven group schemes, under which the pension arrangements were operated through a joint industrial council, association or other organization acting on behalf of a number of employers. Examples of such group schemes are those instituted for wage-earners by the joint industrial councils for the flour-milling and wallpaper-making industries; for foremen, clerks, etc., in engineering and shipbuilding establishments; a federated scheme for nurses and hospital officers, and a federated superannuation system for the teaching and administrative staffs of university institutions. The great advantage of a group scheme from the point of view of the employee is that he can move readily from one firm or institution to another without forfeiting any portion of pension rights which may have been built up. Obviously, for example, in the case of university teachers, where movement from one institution to another is a necessary and desirable feature, some federated scheme is essential.

A pension scheme from a firm's point of view has the advantage of reducing labour turnover and maintaining a greater degree of stability in the composition of the personnel. It gives workers a greater sense of security

and tends to promote more cordial relations between workers and management, since it obviates the criticisms often made when long-service workers are retired, that the firm is only interested in getting what it can out of its employees. A pension scheme facilitates the problem of terminating the services of older workpeople and there is no need to consider retaining the services of old, long-service employees on grounds of moral obligation. Incidentally, it may be mentioned that pension funds and contributions thereto are exempted from income tax.

A number of the schemes in operation are directly operated by the firms or undertakings concerned under private trust deeds, being self-contained and financed from internal funds provided either by grants from the firm alone or by joint contributions from the firm and its employees. This is most usual where the firm is large and the number of employees affected considerable. The great majority of the schemes, especially among smaller firms, however, are operated in association with an insurance company (or in a few cases, a friendly society). Contributions are regularly paid over to the insurance company which guarantees payment of the pensions.

Many variations are to be found as regards contributions, benefits, and conditions. Thus, out of the 1,617,000 workers covered by pension schemes, 1,003,000 were contributing to the cost, while the remaining 614,000 were covered by schemes under which the whole cost was defrayed by the firm, no contributions being payable by the workers. Where contributory schemes are in operation, the amounts contributed by salaried staffs range from about 2 per cent to 5 or 5½ per cent on salaries. For wage-earners the contributions mostly range, expressed on a weekly basis, from 1s. or 2s. for males and from 6d. to 1s. 6d. for females, though in some schemes the contribution for both sexes is as low as 3d. per week.

In most funds and in many insurance schemes, the employer's contribution is usually an annual amount equal to the total contributions of the employees. In addition, when a scheme is first introduced, many employers pay the whole or part of the cost of pensions given for previous service.

Under some fund arrangements, an annuity is bought with the accumulated total contributions, while in insurance schemes deferred annuity policies are a common feature. Sometimes the amount of annuity or pension is fixed either as a definite sum or as a proportion of the salary and contributions are graded accordingly. A large number of the insurance schemes grade the contributions of employees by salary or wages groups, and provide a pension calculated on the basis of £1 per annum for each shilling of weekly contribution, multiplied by the number of years' service in respect of which contributions have been paid. Thus a contribution of 2s. a week for forty years would secure a pension of £80 per annum.

Flat weekly or yearly rates of pension are fairly common under both the fund and insurance types of scheme, applying chiefly to wage-earners and usually for amounts varying from about 15s. to 30s. or £2 a week; 20s. being the most usual amount.

Certain options are frequently given, for example, as regards age of retirement, or a reduced pension on the joint lives of the retiring employee and his wife, to be continued until the death of the last survivor. A life insurance policy may be included, a lump sum may be given to female employees on marriage, disablement allowances may be added, or other variations made to suit conditions in particular firms.

Various methods are used to determine the amount of pension which is reasonable in specific cases. One of the most usual, especially for salaried staff under fund

schemes, is to multiply a given fraction of the average salary over a certain period (e.g. one year, 3, 5, 7, or 10 years) by the number of years' service. This fraction may vary from $\frac{1}{10}$ to $\frac{1}{20}$ but it is generally $\frac{1}{10}$ or $\frac{1}{8}$. Generally in non-contributory pensions, a minimum length of service to qualify for a pension is defined, this period being generally anything from 10 to 20 years.

To meet the cases where workers leave the service of the firm before they reach retiring age or where the member dies, provisions are usually made for adjusted repayments, the general practice being to pay out the amount of the worker's contributions together with compound interest at about three per cent.

Premiums are payable for men usually at 65 for manual wage earners and from 60 to 65 for salaried workers. For women it varies from 55 to 65 years, though the pensionable age is most frequently 60.

When pension schemes are first introduced special arrangements are usually made for the older employees as they would find it difficult under a contributory scheme to ensure themselves of an adequate pension on retirement. These may take the form of counting part of the back service as fully paid up, or of special grants, or of allowing the older employees to increase their contributions, the firm paying a like amount.

Generally when a scheme is initiated it is optional for employees already in service but is made a condition of service for new entrants.

As regards industries in which industrial pension schemes are most usual, out of the 803,000 salaried employees covered by the schemes, 212,000 were employed by insurance companies, banks and other financial institutions, 131,000 by co-operative societies, 117,000 by firms and undertakings engaged in transport and communications, nearly 78,000 by firms in the metal

engineering and shipbuilding industries and over 77,000 by wholesale and retail distributors.

A large proportion of those employed by co-operative societies and in the distributive trades were warehouse and shop assistants. Of the 814,000 manual wage-earners approximately 217,000 were employed in transport and communications, 103,000 in the textile industries, nearly 100,000 in the metal, engineering and shipbuilding industries and 90,000 in the food, drink and tobacco industries.

Though some of the best known industrial pension schemes have been introduced by large firms employing several thousand workpeople, there is no reason why smaller firms should not introduce a scheme with the aid of an insurance company.

Among firms which provide pension schemes for their staffs may be instanced Messrs. Cadbury Bros., Ltd., J. & J. Colman, Ltd., Pilkington Brothers, Ltd., Rowntree and Co., Ltd., Wiggins, Teape & Co. (1919), Ltd., Lever Brothers and Unilever, Ltd.

The Union Provident Fund introduced in 1933 by Messrs. Unilever, Ltd., Messrs. Lever Brothers and associated companies for example, is a compulsory contributory pension scheme which applies to about 11,000 workers engaged in the soap, oil, seed crushing and margarine industries. Previous to 1933, several companies in the group granted allowances on retirement but these were not uniform. Contributions of 1s. each week are required from every member and to this the firms add 2s a week, the total being allowed to accumulate at compound interest. A joint contribution of this amount yields £699 at the end of 40 years and an employee who joined at 25 years of age and retired at 65 would be entitled in lieu of this capital sum to a pension of £72 a year.

(e) *Family Allowances.*

In a number of countries including Belgium, France, Holland, Poland, Sweden, Italy, New Zealand, and New South Wales, family allowance systems have been introduced which aim at providing an increased income for workers with large families. In some countries such as New Zealand and New South Wales the allowances are financed by the State while in others, e.g. Belgium and France, the extra payments are a direct charge on industry. In the New South Wales scheme the State pays an allowance to the mother of 5s. a week for each child after the first within certain defined income limits. In New Zealand 2s. a week is paid for each child after the second if the family income falls below a certain specified figure.

In Belgium voluntary schemes for family assistance have been in operation in various industries since 1919, the method being that of forming equalization funds into which each employer pays a percentage of his total wages bill and from which he receives an amount equivalent to what he pays out in family allowances to his own employees. In this way, the charge is made general over the whole industry, and there is no inducement for individual employers to discriminate against married men. In 1930 the system was made general by law.

Mr. Seebohm Rowntree in *The Human Needs of Labour* has estimated that in Great Britain the minimum living wage in towns for a family of five is 53s. a week but that for larger families an allowance of 5s. for each child after the third is necessary to bring these larger families up to the same standard.

A few voluntary schemes of family allowances are in operation in Great Britain both in industrial concerns and among groups of professional workers, while an approach to the system is to be found in the coal-mining industry of Durham and Northumberland where by

established custom married men receive a rent allowance and free coal. Recently Messrs. Pilkington, glass manufacturers in St. Helens and the Tootal Broadhurst Lee Company, Ltd., cotton spinners and cotton and rayon manufacturers at Bolton and Manchester have introduced schemes of family allowances based on those worked out by Mr. Seebohm Rowntree. A weekly allowance of 5s a week for each child under fourteen in excess of three is paid to all male employees earning less than £6 a week. Similar schemes have also been introduced by Messrs. Cadbury Brothers at Bournville, Messrs. Rowntree at York, and Messrs. Bulmer at Hereford.

National Social Insurance

Germany was the pioneer country in the development of compulsory State insurance. As far back as 1883, compulsory insurance for workers against sickness was instituted, and the scheme included burial and maternity benefits, while in 1889, contributory invalid and old-age pensions were introduced.

In Great Britain social insurance was inaugurated by the National Insurance Act, 1911, which Act was divided into two parts, the first dealing with National Health Insurance, and the second with Unemployment Insurance.

Health insurance was from the first a national scheme applying to practically the whole industrial population, whereas unemployment insurance was at first tentative and experimental applying only to a few selected industries. National Health Insurance met with a storm of opposition when introduced, but its subsequent history has been one of prosperous and harmonious development; the main criticisms coming from those outside its ambit who desired to be included. The introduction of Unemployment Insurance was quiet and experimental, but its subsequent history has been stormy and eventful.

National Health Insurance came into actual operation in July, 1912, on a compulsory contributory basis. The scheme embraced the great majority of the manual wage-earning population of the country between the ages of 16 and 70, and also those engaged in non-manual labour whose salary did not exceed £160 a year. Later the upper age limit was reduced to 65, and the income limit for non-manual workers was raised to £250. Recently the lower age limit has been reduced to 14.

The essential feature of the scheme is that of an insurance contract, whereby insured persons and their employers pay regular weekly premiums in the form of special stamps purchasable at post offices and affixed to cards. In return they obtain ordinary medical attention and cash payments in the event of illness. The present ordinary rates of contribution are 9d. a week for men, payable in equal shares by employer and employee, and 8½d. a week for women, 4½d. by the employer and 4d. by the employee. There are lower rates for young persons. The receipt of benefits other than medical benefit, is conditional on the payment of a certain number of contributions since the scheme is intended to be actuarially sound over a period of years. Certain persons are *excepted*, and no contribution is payable by them or their employers. These include persons whose employment secures them substantial benefits in sickness and disablement such as Civil Servants, or employees of local authorities, railways or statutory companies. Other excepted persons are apprentices without money payment, wives employed by their husbands, and husbands by their wives. Persons casually employed are excepted provided the employment is for purposes other than that of their employer's trade or business.

In addition to the *excepted* classes, there are also certain *exempted* persons. These are individuals who are normally liable to compulsory insurance, but who for specific

reasons may, if they so desire, make application to remain outside. Exemption is granted for example, to persons with a private income or pension of £26 or upwards per annum, to those dependent on some other person, or those intermittently employed.

There are no automatic exemptions, and it is necessary for the person to apply for and receive an exemption book which must be produced to the employer. The employer, however, is *not* exempted from his share of the contribution. There are about 17,000 exempt persons, and they are entitled to medical, but not to other benefits.

Certain persons (other than married women) may become *voluntary contributors*; the main group being those who have ceased to be insurably employed, e.g. non-manual workers with incomes over £250 a year. Such contributors have to pay the employer's and worker's share of the weekly contributions themselves. In all there are about 615,000 voluntary contributors. A person who ceases to be engaged in an insurable employment does not immediately cease to be an insured person, but is entitled to a free period of insurance for somewhat over two years.

Insurance may be effected through an *Approved Society*, or as a *Deposit Contributor*, but it is definitely to the advantage of an insured person to join an Approved Society, as larger and additional benefits may be obtained. The Approved Societies are organizations of insured persons which have received the approval of the Minister of Health, who has to be satisfied that they are not carried on for profit, and that they are under the absolute control of their members or their duly elected representatives. Every Approved Society must comply with all regulations issued by the Minister of Health, and must submit their accounts for audit by treasury auditors.

The number of approved societies is very large, totalling with branches some 7,000, and have been organized by

various bodies, such as the insurance companies, friendly societies, or trade unions. In all about 18,000,000 workers are covered by National Health Insurance, and of these only about 260,000 are deposit contributors. The national insurance section of any organization has to be kept separate from other activities, but a small sum per member is allocated to the societies to cover their administrative expenses, and there are indirect advantages to certain organizations in having a national insurance section, e.g. an insurance company may find it helps them to extend their other business. Work's provident societies can become approved societies provided the employer's representation on the committee of management is limited, and that the employer assumes a substantial financial responsibility. The workers' freedom to move to other employment also must be safeguarded.

For those persons who are unable to gain admission to an approved society owing to ill health, or who neglect to join such a society, there is the *Deposit Contributors' Fund*, which is administered directly by the Minister of Health. This has never had a very large membership, and whatever was expected when it was inaugurated, it has not in fact been a class of 'bad-health' lives. Benefits which at one time were restricted can now be obtained on the lines of those provided by approved societies, though there are no additional benefits.

Benefits available to all insured persons include medical treatment from a panel doctor as often and as long as may be necessary. On becoming insured a person receives a medical card from the local Insurance Committee, which is handed to the medical practitioner on whose panel the individual desires to be placed.

Medical benefit includes the provision of proper and sufficient drugs and appliances, and these are normally supplied by chemists and pharmacists in accordance with prescriptions issued by panel doctors. It does not,

however, cover the cost of consultations with specialists, operations, hospital treatment, expensive drugs, or anything outside the scope of the work of an ordinary general practitioner.

When a person is incapacitated by illness from work, provided a minimum of 26 contributions have been paid, weekly benefit is payable after a waiting period of 3 days, usually excluding a Sunday. If sickness occurs a second time within 12 months, benefit is payable from the first day, and up to 26 weeks benefit is allowed in the 12 months.

The rate of benefit payable depends on the number of contributions and the period the person has been insured, subject to reductions on account of arrears. Where 26 contributions, but less than 104 have been paid the rate is 9s. a week for men, and 7s. 6d. for women. If 104 contributions or over have been paid the rates are increased to 15s. for men, 12s. for single women and widows, and 10s. for married women. Women who have ceased employment on marriage are entitled to medical benefit—but no other—for a period of eighteen months.

After 26 weeks sickness benefit, *disablement benefit* is then allowed for another 26 weeks, provided 104 contributions have been made. The rates are 7s. 6d. for a man, 6s. for a single or widowed woman, and 5s. for a married woman.

No benefits are payable if the person is receiving compensation for accident or sickness, unless the amount is less than the person would obtain under the current rate of sickness or disablement benefit, when the difference is made good. The approved society, or the Insurance Committee, may take proceedings for compensation on behalf of the insured person.

As regard arrears of contributions, the health insurance scheme deals with these in a generous way, and no contributions are payable during sickness, while unemployed persons are credited with their contributions.

Maternity benefit of 40s. is payable to the wife of an insured man, though if the woman is also insured or has been insured within 12 months, she gets an additional 40s. provided she abstains from remunerative work for a period of four weeks after the birth of the child. Before becoming entitled to this benefit, 42 weeks must have elapsed from entry, and 42 contributions must have been paid. The benefit is administered in the interests of the mother and child in cash, or otherwise, by the approved society, or Insurance Committee, and it is the mother's benefit, even when payable on the husband's insurance.

Additional Benefits

Each approved society has control of the funds derived from the contributions of its members and their employers, and they are allowed to retain any surplus disclosed in the periodical valuations of their assets and liabilities. The surplus may be used to provide additional benefits for their members, such as dental treatment, ophthalmic treatment, hospital or convalescent treatment, or increases in the rate of cash benefits. Additional benefits vary considerably as between the different societies; some few are not able to provide any additional benefits at all; others with large disposable surpluses are in a position to be generous to their members. In order to qualify for additional cash benefits, the insured person must have been a member of the approved society for four years, though additional treatment benefits require only a two years' qualifying period.

The size of the approved societies varies considerably, and according to the report of the Royal Commission on National Health Insurance of 1928, there were then 70 societies with less than 100 members each, while at the other end of the scale there were 24 societies with over 50,000 members each, including two with over 1,000,000 members. Since then, however, continued pressure has

been brought to bear on the smaller societies to amalgamate. The societies are not in general organized on a geographical basis, and this complicates their work since they may have to deal with a considerable number of members, scattered in twos or threes in numerous towns throughout Great Britain. In Eire, the multiplicity of the approved societies and the small membership of each was found to be particularly disadvantageous, and in 1934 the sixty-five societies then operating were compulsorily amalgamated into one society. In Great Britain some attempt is now being made to remove some of the more obvious disparities and anomalies in additional benefits through the distribution of surplus funds by means of partial pooling arrangements and a central contingencies fund.

Pensions

Under the Widows', Orphans' and Old Age Pensions' Act of 1925, a contributory pension scheme was added on to National Health Insurance. The pensions which are provided are as follows:

- (1) Pensions to widows of insured men.
- (2) Allowances to widows of insured men in respect of children under fourteen years of age, or if attending full-time instruction up to sixteen years.
- (3) Pensions in respect of orphans of insured men and women.
- (4) Pensions to insured men and their wives and to insured women on attaining the age of sixty-five.

The scheme includes within its scope all persons who are insured under National Health Insurance, but it is rather wider in its scope, as it applies also to persons who are *exempted* from National Health Insurance and to certain classes of *excepted* persons. Certain persons, such as those who were already voluntary contributors to health

insurance, or those who have passed out of insurance, may voluntarily join the pensions scheme.

The benefits payable are at the rate of 10s. per week from the age of sixty-five to seventy, and thereafter the person is entitled to an ordinary old-age pension, but without any reference to means. Wives of insured men when over sixty-five are also entitled to a pension in addition to that of the husband, but widows who re-marry cease to draw a pension on their own account.

The children's allowances are at the rate of 5s. for the first child, and 3s. for each other child. On behalf of orphans, 7s. 6d. is payable.

The qualification is the lapse of two years since entry into insurance, and the payment of at least 104 contributions, together with a prescribed average number of contributions in the three years previous. For old-age pensions, there must in addition have been not less than five years' continuous insurance immediately prior to the attainment of the age of sixty-five years.

The combined rates for contributions to health and pensions insurance are 1s. 8d. per week for a man, and 1s. 2d. for a woman, and of these the pensions contributions are respectively 11d. and 5½d. Contributions are payable in the form of special stamps affixed to a card, and the liability for seeing that this is done lies on the employer. He is also required in the first instance to pay the whole contribution, but he can deduct the worker's share from wages. In the event of an insured person being engaged by two or more employers in the same week, it is permissible for them to come to an agreement to pay the contribution in turn, but failing such an agreement, liability for stamping the card rests with the first employer in the week.

In 1937 an Act was passed which extended the provisions of the Contributory Pensions Act on a voluntary basis to men and women formerly outside the scope of

the scheme whose incomes do not exceed in the case of men £400 per annum, and in the case of women £250 per annum. In this way, small shopkeepers, higher-grade clerks, farmers, teachers or independent workers are now able to take advantage of the scheme and the benefits are the same as under the compulsory scheme. Contributions paid by the insured person only are graduated according to age of entry rising from 1s. 3d. a week for men not over twenty-one, to 2s. 11d. for men aged between thirty-nine and forty on entry; for widows and orphans benefit only, the scale for men rises from 10d. to 1s. 7d., and the corresponding scale for women is graded from 6d. to 11d. a week.

Unemployment Insurance

Under Part II of the National Insurance Act, 1911, compulsory and contributory Unemployment Insurance was introduced, covering about 2,500,000 workers in seven trades, namely building, iron foundry, construction of works, engineering, saw milling, shipbuilding and construction of vehicles; all of these were 'skilled' trades liable to severe fluctuations in employment. The rate of contribution was fivepence a week, shared equally between employer and employee, and to this the State added one-third of the joint contribution. The scheme was intended to be self-supporting over a period of years. Benefit after a waiting period of six days was seven shillings a week, with a maximum of fifteen weeks' benefit. The benefit was not regarded as a maintenance allowance, but rather as a supplement to savings and other family resources which would help to tide workers over short spells of unemployment.

In 1916, Unemployment Insurance was extended to a further 1,250,000 workers, including the munition, chemical, brick-making, cement, metal and rubber industry, since it was expected that workers in these

industries were likely to be affected by unemployment on the cessation of hostilities.

In 1920 the original scheme was withdrawn and an entirely new Act was passed which covered practically all manual workers except domestic servants, agriculturalists and workers permanently engaged in occupations with little or no unemployment. Non-manual workers with incomes under £250 per annum were also brought in, and the total number of persons insured was increased to nearly 12,000,000. This Act rather than that of 1911 may properly be regarded as the parent Act of our present Unemployment Insurance service. It saved the able-bodied unemployed from the unpopular Poor Law which was based on the theories of 1834, when it was believed that if unemployment were made sufficiently unpleasant (though preventing actual destitution) the unemployed would find work for themselves. Benefits were 15s. a week for men (12s. for women), and contributions 8d. a week for men shared equally between employer and employed. The maximum period of benefit was retained at fifteen weeks, but was subject to the 'ratio rule' of one week of benefit for every six contributions.

Within a year, however, the extended scheme broke down financially, as in face of severe and prolonged unemployment the Government decided to allow insured persons to continue to draw benefit even though they had exhausted their statutory rights.

Between 1920 and 1934 the history of Unemployment Insurance followed a very chequered course and something like thirty-five different Acts were passed to bolster up a system that had become almost hopelessly insolvent.

The Unemployed Act, 1934, restored the scheme to true insurance principles, and this Act now regulates the whole system of Unemployment Insurance and assistance. The Act was divided into two parts; Part I dealing with Unemployment Insurance, and Part II setting up the

Unemployment Assistance Board, charged with looking after all the able-bodied unemployed between the ages of sixteen and sixty-five—that is broadly speaking all those who have exhausted their insurance benefit, or come within the scope of the Health Insurance scheme. Altogether some 16,000,000 persons come within the scope of the two schemes of insurance and relief. Under the Act a Statutory Unemployment Insurance Committee was set up to watch over the finance and working of the scheme, and to report annually to Parliament; the first chairman of this committee being Sir William Beveridge. Various matters can be referred to this committee, and it was this body for example, that recommended the special scheme of insurance for agriculture. It also recommends any necessary changes in contributions or benefits to maintain the solvency of the insurance fund; the principle laid down in the Act being that the contributory income plus about one-third of the cost contributed by the State shall determine the amounts and duration of benefit.

Unemployment Insurance is administered by the Ministry of Labour through the officers at its 400 local employment exchanges. There are 300 Courts of Referees with an umpire sitting in London as a final Court of Appeal in cases of disputed benefit.

Membership of the scheme is compulsory on all manual workers aged fourteen to sixty-five, with the exception of private domestic servants and persons permanently employed by a public or local authority, or statutory company, or in some few other occupations. Weekly contributions paid by affixing a stamp to a special card are at present 1s. 6d. a week for adult males, paid in equal shares by employer and employee, and for adult women, 1s. 4d., with lower rates for young persons graduated according to age.

Benefits after three days unemployment (previous to 1937 the waiting period was six days) for adult males

are 17s. a week (adult women 15s.) with an adult dependents allowance of 9s. and 3s. for each child. Certain statutory conditions, however, have to be fulfilled before benefit is paid. The main condition is that thirty contributions must have been paid within the two years previous to the date of the claim. Normally the maximum period of benefit in an insurance year is twenty-six weeks but persons with a good insurance record may be granted benefit up to fifty-two weeks in an insurance year. The claimant must be genuinely unemployed and capable of and available for work though certain restrictions apply in the case of workers engaged in seasonal or casual occupations and married women. Benefit may be refused for a period not exceeding six weeks where employment was lost through misconduct or was left voluntarily without just cause or where a suitable offer of employment was refused without good cause. Failure to attend a training course may also result in disqualification.

No benefit is paid to workers unemployed as a result of a trade dispute in their own particular industry.

Under Part II of the Act an Unemployment Assistance Board was set up to take over the previous 'transitional payments' and the administration of out-relief to all able-bodied unemployed who have exhausted their benefits or are otherwise not qualified to obtain insurance benefit. The cost of unemployment assistance is a national charge except for five per cent of the total cost which has to be contributed by local authorities. The Public Assistance authorities, however, retained the duty of assisting the sick, aged and infirm, and remained responsible for the medical needs and institutional or clinical treatment of persons under the Board.

The special scheme for agricultural workers was introduced in 1936 by the Unemployment Insurance (Agriculture) Act of that year; contributions being at a

lower rate, namely, 9d. a week for adult men and 8d. for women (reduced in 1938 to 8d. and 7d. respectively) payable in equal shares by employer and employee, with a lower rate of benefit, namely, 14s. a week for men and 12s. 6d. for women, with 7s. a week for an adult dependent and 3s. for every child, subject to a maximum benefit rate of 30s. a week.

In order to qualify for benefit, twenty contributions must have been paid in the last two years. Special provisions apply where workers are on yearly or half-yearly hirings, for on the completion of the hiring a refund is made of twenty-five per cent of the contributions paid in the case of a yearly hiring and of twelve and a half per cent in the case of a half-yearly hiring. About 600,000 workers were insured under the scheme by the end of 1936.

Industry and Social Insurance.

The development of social insurance has been an important factor in connexion with the problems of industrial relations and industrial welfare. It has given some degree of economic stability to the worker and has in effect done something to secure a national minimum wage. The amount of the workers' contributions, namely for all-in insurance, is. 7d. a week in the case of adult men and is. 3d. in the case of adult women, is especially for the lowest paid workers where the percentage on weekly earnings may be well over four per cent, a heavy burden. On the Continent, contributions are graded according to wage rates but the worker's contributions are much higher probably between ten and twenty per cent of wages. The employer's contribution has the effect of a poll tax on employment and it has been suggested that it would be better to levy a tax on labour turnover or dismissals instead. The total annual cost of social insurance including insurance premiums for workmen's compensation amounts to about £4 14s. for

each adult male employee in an average firm. This, however, is but a small item in total costs of production, seldom amounting to as much as five per cent of total costs. To this, perhaps, should be added about two per cent of the wage bill for holidays with pay. Even as things are many firms find it desirable to introduce medical services, pension schemes, holiday funds or even family allowances and industry obviously has responsibilities to its workers which are not fully covered by compulsory State schemes of insurance.

More important is the fact that Unemployment Insurance does not give any direct incentive to firms or industries to reduce the volume of their unemployment. Some have suggested unemployment insurance by industries as a better alternative, since then the industry would reap the advantage of a more regular employment policy. The difficulties, however, are considerable, and though at first it was intended to allow industries to administer their own unemployment insurance, the idea has been abandoned, and only two special schemes have been introduced, namely, for insurance (100,000 persons), and banking (41,000 persons).

The trade unions have benefited considerably from the insurance schemes, as it has relieved them of the necessity of paying out benefits for sickness and unemployment, and they have themselves frequently obtained recognition as 'approved societies'.

CHAPTER XIV

METHODS OF SECURING CONTACTS BETWEEN MANAGEMENT AND LABOUR IN LARGE FIRMS

THE problem which confronts management in the large-scale industries is largely that of providing an efficient substitute for the personal contacts and community of interest which are the essence of the successful relations that often exist in small-scale industry. In the small firm the owner takes a personal interest in each individual—alongside of whom he works himself—and the individual employee is treated as an individual, not as a mere number on a pay-roll. Even though working conditions may be in every way inferior to those in large workshops, there is a strong corporate feeling and community of interest between the employer and his few workers. The problem of finding something which will take the place of individual personal contacts is more urgent than ever before, owing to the increased nervous strain of modern industry, the better education of workers, and the fact that workers are becoming more critical of inefficiencies in management. In the more progressive firms the problem is being tackled along various lines: thus pension schemes aim at giving the worker greater economic security; works councils and suggestion schemes are designed to keep management informed of grievances; medical services, dental services, canteens or recreational schemes ensure better health to the workers while activities such as safety-first committees, specialized

labour management, welfare schemes or staff magazines are designed in part at least to increase the community of interest between management and the operatives. Several of these methods of improving industrial relations have been described in earlier chapters, and so the following sections are devoted only to a consideration of methods not previously described in detail.

Works Committees

Before the Great War, joint committees of representatives of the management and the workers were only to be found in very few firms. A considerable impetus was given to the formation of works committees by the industrial conditions prevailing during the war, such for example, as the necessity of applying to individual establishments proposals for the 'dilution' of labour, or new systems of wage payment.

The importance of the works committee or council lies in the possibilities it provides in large firms for securing personal contacts between the management and representatives of the employees.

In 1917 the Whitley Committee recommended as part of their general scheme for securing improved relations in industry that joint works committees should be set up representing both management and workpeople in individual establishments. In their Third Report the Whitley Committee pointed out that 'There are many questions closely affecting daily life and comfort in, and the success of the business, and affecting in no small degree efficiency of working; which are peculiar to the individual workshop or factory. The purpose of a works committee is to establish and maintain a system of co-operation in all these workshop matters'.

During 1918 the Ministry of Labour prepared suggestions as to the constitution and functions of a joint works committee, including a model scheme with various

modifications designed to meet the requirements of different industries. Something like 1,000 works committees appear to have been formed, of which over 100 were in the Pottery industry. Among other industries in which the movement made considerable progress were tramways, cement manufacture, electricity supply, Welsh tinplate and sheet industry, and wall-paper-making.

After 1920 there was a considerable decline in the number of works committees and as the Balfour Committee on Industry and Trade stated 'It is probably true to say that they have only survived in establishments in which there is a very definite desire on the part of both managements and workpeople to make the committees a success'.¹

This desire is not generally evidenced up to the present time other than in a few industries such as that of wall-paper-making, the Joint Industrial Council of which stated in 1933, that they regarded these committees as having great importance. Even when there is no formal business 'discussions are definitely useful as a means of stimulating interest in the life of the factory'.

It does not seem probable that works committees could be effectively imposed on industrial establishments from without though several proposals of this kind have been made. To be really successful works committees should be spontaneous growths within individual firms.

In the engineering trades, the York Agreement of 1919 between the Trade Union and the Employers' Federation stated that 'A works committee may be set up in each establishment, consisting of not more than seven shop stewards who should be representative of the various classes of workpeople employed in the establishment'. As an illustration of the nature of such a committee that set up in the works of Messrs. Mather &

¹ *Survey of Industrial Relations*, p. 305.

Platt, Ltd., is empowered to consider all matters appertaining to conditions of labour. As a routine procedure, the committee examines the reasons given by workers for leaving the firm's employ, with a view to removing any causes of dissatisfaction in working conditions that may be discovered. Among the matters discussed at the meetings of the committee are the arrangements regarding overtime, piece-rates, accidents, timekeeping, shop discipline, education of apprentices, and the elimination of waste. There is a special sub-committee which administers the works' dining-rooms. On the day after the meeting of the works committee, meetings are held between the foreman and the shop stewards to take any necessary action upon matters raised at the works committee.

As regards the functions of a works committee these are generally limited by its constitution, but in general they include the adjustment of grievances, works' rules and discipline, questions relating to the health, safety and welfare of the operatives, training of new entrants, and details regarding methods of paying wages, holidays and engagement of workpeople.

Generally it is found that the matters at first brought forward for discussion by the workers' side are often petty grievances which only need to be expressed to be set right. This stage is common to nearly all works committees and sometimes leads to criticism from the management side who complain that the meetings are not worth the time spent on them. With patience, however, these difficulties can be overcome and in any case the grievances, small as they may appear, have perhaps rankled for years. When the workers see that something is being done, they become readier to bring forward more constructive proposals.

Profit-sharing and Labour Co-partnership

By profit-sharing is meant an agreement between an employer and his employees whereby the latter receive in addition to their full wages, a share fixed beforehand in the profits of the undertaking.

The amount paid out to workers varies greatly as between different schemes but roughly it is in the majority of schemes anything from four per cent to ten per cent of their wages for the year. In 1937 the average amount of bonus was £11 8s. and the average addition to wages was 6.1 per cent.

Among fishermen profit-sharing has been practised from time immemorial. In France the first experiment in industrial profit-sharing was tried in 1842 by M. Leclaire a house painter of Paris who employed on the average some 200 workers. This scheme proved very successful and was adopted by other employers. Lord Wallscourt introduced a scheme of profit-sharing in 1832 among the workers on his Irish estate. The first important trial of profit-sharing in England was made by H. Briggs & Co. in 1865 at their Whitwood and Methley Collieries in Yorkshire. Its introduction received wide publicity but the experiment proved a failure. Relations between the firm and their workers had been severely strained for a long time before the introduction of profit-sharing, and though for some years the scheme was successful, eventually a quarrel arose with the local trade union, the men went out on strike and the system of profit-sharing was withdrawn in 1875 after nine years working. Though profit-sharing had been eulogized by the economists, Thornton, Fawcett and John Stuart Mill, the failure of this much-advertized scheme was very damaging to the movement. It was unfortunate that this scheme should have originated in a spirit of hostility to the trade unions as it naturally made the movement somewhat suspect subsequently from the

trade union point of view. Other schemes started about the same time, though far less well known were more successful. Thus a small firm which initiated profit-sharing also in 1865 and Messrs. Fox Brothers, Woollen Manufacturers of Wellington, Somerset, who commenced profit-sharing in 1866, still continue their schemes.

In the period 1889-91 there was a great revival of interest in profit-sharing and about fifty firms adopted profit-sharing during these years. Since then, however, interest has tended to centre more in a special type of profit-sharing known as Labour Co-partnership which was initiated in 1889 by the South Metropolitan Gas Company.

The number of profit-sharing schemes in operation of which particulars are known to the Ministry of Labour during the past ten years has fluctuated from somewhat over 400 to somewhat over 500, and among well-known firms which have introduced profit-sharing or co-partnership schemes are the following: Sir W. G. Armstrong-Whitworth & Co., Ltd., shipbuilders and engineers; Brooke Bond & Co., Ltd., tea blenders and packers; Clarke, Nicholls & Coombs, Ltd., confectionery manufacturers; Prudential Assurance Co., Ltd.; Lever Brothers, Ltd., soap manufacturers; Bradford Dyers Association, Ltd.; Boots Pure Drug Co., Ltd.; Achille Serre, Ltd., dyers and cleaners; Distillers Co., Ltd.; Tootal Broadhurst Lee & Co., Ltd.

The advocates of profit-sharing argue that ordinary time-wages afford no incentive to workers to give their best while piece-rates cannot be applied in all industries and do not in any way encourage workers to avoid waste of materials. Profit-sharing attempts to bridge the gap between labour and capital by increasing their mutuality of interest. Successful profit-sharing may open up a new source of profit since waste of material or other unnecessary expenditure may be avoided while there may also

be an economy in supervision. If these advantages be obtained, the argument that profit-sharing is unfair to the employer because labour does not share in losses, falls to the ground. On the other hand, it may be argued that as profits depend largely on causes over which workers have no control, it is illogical that they should enter into wages.

Profit-sharing has had to meet the strong opposition of the trade unions who dislike it on the ground that it may weaken the strength of the unions.

The stimulus given to the workers has in some profit-sharing schemes been small because the additional remuneration is but a small fraction of the yearly wage. Also the interest of workers in the scheme may flag when there are no profits or only very small profits to divide; further, the incentive is non-cumulative and the workers have no say in management.

It was to overcome some of the inherent limitations of simple profit-sharing that the more elaborate system of labour co-partnership was introduced in 1889 by the South Metropolitan Gas Company.

In labour co-partnership schemes the workers' share of the profits is accumulated so that an investment in the capital of the business is built up. The worker thus becomes a part-owner with the ordinary rights and responsibilities of a shareholder.

In some co-partnership schemes a co-partnership committee is established, consisting of representatives of the workers and the management, which functions somewhat in the manner of a works council. In the most complete forms, provisions are made for the election of one or more directors by the workers, e.g. South Metropolitan Gas Co.; Tollesbury and Mersea Native Oyster Fishing Co., Ltd.; Foster, Sons & Co., decorators at Burnley; or the South Suburban Gas Co.

Labour co-partnership has achieved its greatest success

in gas undertakings and as far as company undertakings are concerned the industry has been very largely re-organized on a profit-sharing or co-partnership basis since about 1908.

In large measure the wide extension of co-partnership in gas undertakings has been due to the pioneer work of Sir George Livesey, who introduced the system in the South Metropolitan Gas Works when he was Chairman in 1889. The special conditions under which this industry operates has undoubtedly also been an important factor making for the success of co-partnership. It has not, however, been extended to any degree in other public utilities which are in a somewhat similar position though there are reasons to suggest that it might have been equally successful in, say, tramways, electricity supply and perhaps railways and motor-bus undertakings.

The special conditions may be summarized as follows:

- (1) A gas company has a local monopoly.
- (2) Strict regulations are enforced by the State regarding the prices to be charged and the dividends which may be paid.
- (3) There is a great and assured demand.
- (4) Special regulations regarding contracts of service.

The regulations enforced regarding the price of gas have generally taken the form of a *sliding-scale*, whereby dividends cannot be increased beyond a certain percentage, unless there is a reduction in the price of gas, or of 'maximum dividends', whereby the maximum dividend which the company may pay is fixed and also a maximum price is set which the company may charge for its gas. They may, however, build up a dividend equalization fund, whereby deficiencies in dividends during bad years may be made up. In both cases the profit-sharing bonus paid to the workers goes up or down

inversely as the price of gas. In the second type, the employees have a strong interest in reducing the cost of production when the dividends are at a maximum, since the whole of the surplus profit goes to reducing the price of gas, thereby increasing their bonuses. In the sliding-scale agreements the co-partnership schemes tie together the interests of consumers, shareholders and workers, since all parties benefit from a reduction in the price of gas.

Some details of the South Metropolitan Gas Company's scheme may be of interest. Their private act provided that at a price of 3s. 1d. per 1,000 cubic feet, the shareholders' dividend should be limited to four per cent, but for each 1d. reduction in the price of gas the shareholders were allowed a further 2s. 8d. per cent in dividend. In this Company's original co-partnership scheme, the workers' bonus was nil at the price of 3s. 1d. per 1,000 cubic feet, but for each 1d. reduction in the price of gas they obtained a bonus of three-quarters of one per cent of their wages. The bonus, however, though calculated on weekly wages is not paid out as cash. One-half is invested in the company's ordinary stock, and the other half is retained on savings account at three per cent interest, withdrawable only in special circumstances. In the gas industry there has been no difficulty in finding employment for the extra capital built up in this way.¹

In 1920 statutory provisions for the co-partnership scheme of the South Metropolitan Gas Company were incorporated in a new private act. Shareholders were to receive a dividend of five per cent on the old ordinary stock, and six per cent on new ordinary stock. Any surplus profit was to be divided: three-quarters going to reduce the price of gas, and the remaining quarter being divided

¹ In the railway industry it is interesting to note that employment can also always be found for workers' savings, though, of course, there is no profit-sharing scheme. The Railway Banks collect workers' savings and utilize them in financing the undertakings.

between the ordinary shareholders and the employee co-operators.

There is a co-partnership committee which functions in a manner similar to a works committee. 'Juries of workmen' investigate the circumstances of accidents. Auditors are elected by the workers to supervise the accounts, and three employees are elected to the board of directors as 'employee-directors'.

Apart from co-partnership, there are in existence a number of other arrangements known as 'deposit schemes' whereby employees able and willing to deposit money with the firm are guaranteed a minimum rate of interest, together with an additional rate of interest varying with the profits. Some firms with a view to enlisting the interest of their employees in the firm, encourage their workers to take up shares or to acquire other capital in the undertaking by according specially favourable terms to employee investors, though these firms do not distribute any part of their profits as such to employees.

Suggestion Schemes

Suggestion schemes have been introduced by numerous firms, both large and medium-sized, for the purpose of encouraging employees to offer suggestions for improvements in any department. Some of the existing schemes date back to about the beginning of the century, but the practice has considerably increased during recent years. Experience has shown that valuable information may be obtained, and the cumulative effect of successive small improvements may be considerable, but without the stimulus of a scheme and a clear indication that suggestions will be welcomed, few suggestions will be brought forward.

In most of the schemes, there is an organized routine for the communication and examination of the suggestions. Special forms may be provided for suggestions, and these

when filled up may be placed in special boxes provided for the purpose either in each department or in some convenient central position in the works, or as is the practice in certain firms, they may be addressed directly to the management. In some suggestion schemes, the worker's name, number and department have to be stated, but in others they can be anonymous, the form being provided with a numbered counterfoil corresponding to that of the sheet, and this counterfoil is presented if a prize is awarded for the suggestion.

Some firms print a list of subjects on which suggestions are invited, though it is made clear that suggestions will be welcomed on any other subjects. One such form used by a Lancashire firm, lists as many as thirty different subjects including the following: reduction in number of accidents, promoting punctuality, prevention of waste, reduction in delays, saving of fuel, power and light, improvements in printed forms such as labels, invoices, work-sheets or time-cards, improvements in advertising methods, prevention of unnecessary noise.

A London firm states on its form that suggestions are invited on any subject bearing upon the company's activities in any way. This company proceeds on the idea of allotting a definite sum of money each quarter for awards, and a special committee credits marks according to the value of the suggestions. When no award is obtained the marks are carried forward to the next quarter.

In some firms, the suggestions are examined by the management, in others they are considered by a committee on which both management and workers are represented. Messrs. Mather & Platt, Ltd., for example, have a Suggestions Committee consisting of the director of research, the works manager, a departmental head, a representative from the work's office, and a representative of the workmen appointed by the shop committee. In

the opinion of the firm, the value of the scheme lies not only in the actual suggestions accepted, but in the interest in their work which it stimulates among those who offer suggestions.

In almost all suggestion schemes, monetary awards are made to those whose suggestions are accepted. As regards the amount of the award, practice varies considerably. In some the awards are trifling, but in others they are based on the saving effected after allowing for the cost of any necessary alterations or provision of new equipment, or upon the novelty or ingenuity of the suggestion. Experience shows that there should be no limit to the amount of the award as otherwise workers may feel that the firm is endeavouring to secure valuable ideas without adequate payments. Occasionally an award of £100 or more has been made, but usually the amounts range from a few shillings up to two or three pounds. When suggestions have been adopted, a note is generally made on the worker's record card, and the fact is taken into account in making promotions or granting wage increases. In some of the schemes, provisions are made for arbitration should a worker feel that an award is too small.

In the Post Office scheme, there is a special 'Awards Committee', and the lowest sum awarded is one pound. A large number of suggestions are received annually, and in 1932, for example, about 350 suggestions were received, and of these 100 were adopted outright, while a further thirty were adopted with modifications. Every class of worker in the post office comes within the scheme, and each year a great variety of useful suggestions are received from all parts of the country.

In the scheme introduced by the London 'Under-ground' Railways, suggestions are invited from all grades of the staff in regard to such matters as methods of increasing traffic, securing economy in working, or

improvements in train working, stations, rolling stock and equipment. Awards are given at the discretion of the board, one pound being the minimum for a suggestion which is accepted and carried into effect. Some 6,500 suggestions are received in a year and awards are made in about ten per cent of the cases.¹

Describing the suggestion scheme introduced in his factory, Mr. Seebohm Rowntree remarks: 'For a time, the workers were somewhat chary of making suggestions as they felt that their immediate superiors might regard them as reflections on their own ability to visualize possible improvements. This feeling has, however, been dissipated, and it is now generally regarded as creditable to an overseer to have under him employees who are interested and keen enough to think out improvements.'²

Suggestion schemes do not usually apply to the administrative staff, as they are expected in the course of their ordinary duties to suggest improved methods, but the schemes in operation especially in large-scale industry have proved valuable by providing opportunities for the workers to exercise their initiative and to show intelligent interest in promoting the efficiency of the undertaking. They also serve a useful purpose in providing a channel from workers to management for the communication of criticisms of inefficiencies which criticisms are more prevalent among the workers than many managers are aware. Some firms such as Mander Brothers, take the very useful step of explaining why any particular suggestion cannot be adopted.

Works and Staff Magazines

Many firms undertake the production of a works or staff magazine for circulation among their employees.

¹ J. P. Thomas, *Handling London's Underground Traffic*, pp. 199-200.

² *The Human Factor in Business*, p. 148.

Such publications are not intended for publicity purposes, and are not usually issued to customers.¹

Mr. R. R. Hyde, director of the Industrial Welfare Society has estimated that in this country between 200 and 300 staff magazines are published at regular intervals, usually monthly, ranging from that issued by one of the great transport companies with a circulation round about the 100,000 mark to the multigraphed magazine of one of the smaller textile mills.²

The work's magazine performs a useful function in helping to increase *esprit de corps* among the employees, and there is need of something of this kind in a large firm where the general policy is apt to be lost sight of in a mass of departmental details.

As far as possible, staff magazines should be run on self-supporting lines, though generally a subsidy is given by the firm and a charge of a few pence only is made to the workers. The contributors, generally unpaid, are for the most part drawn from the staff, while some member of the administrative or clerical staff acts as editor. Costs of production are thus kept down. Generally some additional revenue can be obtained from advertisements.

A works magazine affords a valuable medium for giving publicity to welfare activities such as sports clubs, social and educational activities, and for disseminating information on matters such as accident prevention, suggestion schemes, new processes developments in the industry or the activities of works councils.

An important and popular feature of a work's magazine is the publication of social information relating to staff

¹ Some firms also issue magazines to their customers, examples being *Hearth and Home* published by Messrs. Bibby & Co., Ltd., of Liverpool, or *The Concrete Way* produced by the British Reinforced Concrete Engineering Co., Ltd., of Stafford. Other firms may issue a magazine to their agents and sales representatives; an example being *Exide News* issued by the Chloride Electrical Storage Company, Ltd., of Clifton Junction, Manchester.

² In a letter to *The Times* dated December 1st, 1936.

changes, promotions, retirements, marriages, etc. American staff magazines make a special feature of this and are ready to notice even small matters of this kind, and the paragraphs are usually written in a bright 'chatty' manner.

The aim of the editor should be to arouse the interest of the staff, and on this account, the magazine should not be too 'highbrow'. Humorous articles and personal 'pars', are very popular, but room can be found for an occasional article with a serious appeal. Some magazines contain no technical articles at all, while others provide a mixture of stories, verse, technical articles, personal paragraphs and competitions.

The magazine should be illustrated and frequently small prizes are awarded for the best photographs sent in by readers. Some magazines run a 'market column', wherein for a small sum members of the staff can advertise articles for sale or exchange and this feature is usually well appreciated. 'Various efforts have been made from time to time to stimulate this very useful form of journalism by means of insets, the syndication of articles and blocks, the exchange of matter, but without success, the reason for which is that the staff magazine must remain an intimate personal journal and not attempt to compete with national publications.'¹

The number of successful staff magazines, is so considerable that it is perhaps invidious to quote examples, but for purposes of illustration mention may be made of those issued by each of the four railway groups, the Port of London Authority, the London Passenger Transport Board, Imperial Chemical Industries, Cadbury Brothers, Rowntrees, Handley Page, Whitbread & Co., McMichael Radio, Platt Brothers, Lever Brothers and the South Metropolitan Gas Company. Many of them display a

¹ Mr. R. R. Hyde in a letter to *The Times*, referred to on the previous page.

remarkable freshness of outlook and high journalistic talent, and to this even the titles of the magazines themselves give evidence, e.g. *Penny Fare* of the London Passenger Transport Board, the *Circulator* of Messrs. Babcock & Wilcox, *Our Note-book* of United Dairies, Ltd., *Illustration* of the Sun Engraving Co., Ltd., *Strawberry Pie* of A. Reid & Co. (printers), *Space* of Benn Brothers, Ltd., *Drummer* of the Premier Drum Co., Ltd., *The Biscuit Box* of Messrs. Peak Frean & Co., *Ourselves* of the C.W.S., *Naft* of the Anglo-Persian Oil Co., *Window Card* of Carter Paterson & Co., or *Zodiac* of Cable and Wireless Ltd.

Successful magazines have been run for many years by concerns with comparatively small staffs, and it is not essential that the firm should be of the largest size in order to secure a sufficient circulation to make the printing worth while. *The Green Can* of Messrs. Mander Brothers and *Speed* of the Edinburgh Corporation Transport Department, or some of the publications cited above are examples of what can be achieved by these smaller organizations.

Mr. W. E. Simnett who initiated the correspondence in *The Times* regarding works and staff magazines, and who has examined a very large number of these publications is of the opinion that 'Many of these journals, including the house organ of *The Times* (whose existence I had not expected) exhibit a high standard of production and a wide range of literary interest, as well as happy instances of ingenuity in their titles, and although one editor thinks they show a high rate of mortality, I do not believe, judging by the numerous examples of magazines which have appeared continuously for many years, that the mortality rate is any higher than in the public Press'.

Promotion and Staff Grading

In a small or medium-sized firm, the problem of grading employees according to merit and selecting suitable

persons for promotion presents no great difficulty since the abilities and personalities of all members of the staff will probably be well known to the chief officials. It is a much more difficult problem to assess the relative merits of employees for promotion in a large organization or where the staff is scattered over a wide area. Probably the best solution of the difficulties is the adoption of some reporting system such as that utilized in the Civil Service which will provide in a uniform and summarized form, sufficient information about the abilities, character and personality of individual employees to enable a fair assessment of their present and potential value to the firm. It is essential that all reports should be in a similar form and based on a common standard. The method adopted, therefore, has been to evolve a form with a standard list of questions or qualities from the answers to which a definite rating can be obtained. Thus the reports might include information on such matters as the following: intelligence, knowledge of work, performance of duty, judgment and common sense, initiative, tact and manner, organizing ability, leadership or co-operativeness.

It is essential in a large firm that some definite system of periodical assessment of qualities should be provided as otherwise dissatisfaction regarding methods of promotion may arise and the most suitable men for promotion may not be discovered.

INDEX

Abbott, A., 56n. Absenteeism, 69-77, 109, 125. Accidents, 154-71. frequency, 154-5. proneness, 155. severity, 154-5. Agricultural Unemployment Insurance, 251-2. Agricultural Wages Committees, 212-3. Amulree, Lord, 205, 226n. Apprenticeship, 50, 52, 53, 56. Arbitration, 121, 216, 225-6, 265. Ashton, T. S., 123n. Babbage, C.; 1. Balfour Committee, 124n, 256. Barth, C. G., 3, 9. Bata, T., 11, 127-8. Bedaux System, 201. Belgium, 56, 219, 239. Benevolent Schemes, 231-2. Benn Bros., 106, 107. Berridge, W. A., 81. Bollington, 122. Boots Pure Drug Co., 54, 259.	Boredom, 103-6. Boulton and Watt, 1. Building Trades, 9, 192, 194. Burton, Montague, Messrs., 131, 136. <i>Business</i> , 109. Cadbury Bros., 54, 55, 123, 238, 240. Cancers, industrial, 146-7. Canteens, 99, 126, 128-31, 141. Cattell, J. M., 20. Cave Committee, 210. Certifying Surgeons, 115. Chain making, 209. Chatelier, le, 3. Christian Socialists, 202. Cinematograph, 14, 50-1. Clapham, J. H., 191. Coal-mining, 73, 75-6, 137-8, 213-4, 239-40. College of Technology, Manchester, 27, 28, 58. Colman, J. & J., Ltd., 123, 238. Committees, 37. works, 157, 164, 255-7.
--	--

Compensation, Workmen's, 150-3, 165-71.	Examining surgeons, 151.
Conciliation, 220-5.	Exception principle, 10.
Conseils de Prud'hommes, 216, 219.	Exit interview, 50, 84.
Co-operative production, 201-4.	Factories Act, 1937, 86-7, 95, 117-19, 156, 158.
Co-partnership, labour, 259, 260-3.	Factory Acts, 113-19.
Cost accounting, 10.	Family allowances, 239-40.
Cost of living scales, 193, 218n.	Fatigue, 96-102.
Cotton industry, 114, 117, 214.	Fay, C. R., 203.
Crowley, A., 120-1.	Fayol, H., 4-5, 16-19, 36.
Dalton, J. E., 56n.	Five-day week, 106-10, 206.
Day Continuation Schools, 53, 54-5.	Foot Clinics, 135.
Day dreaming, 104.	Ford, H., 10.
Delegation, 29, 31, 34.	Foremen, 30, 39, 58-68.
Dental Clinics, 135, 136.	Foundries, 92.
Departmental Organization, 34-6.	France, 3, 21, 41n, 56, 219, 239.
Derwent Foundry Co., 12.	Fréminville, de, 3.
Devolution of authority, 29, 30-1, 34-5.	Functional foremanship, 63-5.
Diseases, industrial, 142-53.	Functional organization, 36-8.
Dubreuil, H., 204.	
Dundee School of Economics, 28.	
Eire, 41n.	Galton, F., 20.
Emerson, H., 3, 16, 198.	Gantt, H. L., 3, 198.
End spurt, 99-100.	Garden, D. J., 78n.
	Germany, 21-2, 23, 49, 50, 173-4, 240.
	Gilbreth, F. B., 3, 13, 58.
	Guidi, P., 100.
	Glee clubs, 140.
	Gold mining, 85, 137.
	Greg, S., 122-3.

Halsey, F. A., 199.
'Hammer rights', 91.
Health insurance, 241-6.
Hill, R. L., 120.
Hobart, M. C., 80.
Holidays with pay, 204-6,
 210.
Holland, 56, 239.
Hoover, Ltd., 70.
Hospitals, 128, 158.
Housing, factory, 127, 136-8.
Humidity, 86-7.
Hyde, R. R., 136, 138, 267,
 268n.

Illumination, 91-6.
Incentives, 7-8, 190, 196-201.
India, 70, 76, 137.
Individual differences, 19,
 20, 22, 49.
Industrial Court, 226.
Industrial Fatigue Research
 Board, 12, 24, 86, 91.
Industrial Health Research
 Board, 5, 23, 24, 72, 73n,
 75n, 76n, 89, 103, 105.
Industrial Assurance, 230.
Industrial Psychology, 19-26.
Industrial Welfare Society,
 125, 138-9.
Industry Illustrated, 70n, 74n.
Influenza, 70, 74, 136.
Institute of Industrial Ad-
 ministration, 5, 66.

Institute of Labour Manage-
 ment, 5, 139-40.
International Management
 Institute, 5-6.

Japan, 120, 137.
Jones, E. D., 16, 30, 81

Kettle, R., 219.
Kiddier, W., 173n.

Labour Exchanges, 22, 46, 50.
Labour Management, 45-6.
Labour Turnover, 22, 78-84,
 125.

Langdon, J. N., 103n.
Landauer, E., 48.
Lardner, Dr., 2.
Late arrivals, 77-8.
Laundries, 69, 97.
Leiper, M. A., 72n, 73n.
Lever Bros., 238, 259.
Levy, H., 230n.
Lighting, factory, 91-6, 161.
Line and Staff organization,
 38-9.
Line organization, 34-6.
Lipson, E., 121n.
Livesey, G., 261.
L.M.S.R., 30.
London School of Economics,
 28.
Lucas, Messrs. Joseph, 54.

Mackay, R. J., 204n. Management Research Groups, 5. Manning, Cardinal, 177. Marwick, W. H., 124n, 138n. Mather & Platt, Ltd., 53-4, 123, 130-1, 256-7, 264-5. Medical facilities, 135-6. Mess-rooms, 131-3. Metropolitan Vickers, Ltd., 54. Mill, J. S., 202, 258. Minimum wages, 207-15. Minton, J., 158. Monotony, 103-6. Movement of papers chart, 32. Movement studies, 13-15, 51. Mundella, A. J., 217. Munsterberg, H., 20, 49. Music, 105, 140. Myers, C. S., 25, 155n. National Institute of Industrial Psychology, 5, 23, 25, 104. Nelson, Messrs., 124. Noise, 87-91. Organization charts, 32-3. Owen, R., 121-2, 202. Payment by results, 189, 190, 192, 194-5.	Pension schemes, 233-8. Pensions, National, 246-8. Pickworth, P. C. N., 12. Place, F., 174. Pope Benedict XV, 123. Pope Leo XIII, 43n. Posture, 98-9, 134, 143. Profit-sharing, 258-60. Promotion, 55, 65, 67, 269- 70. Railway Banks, 229-30. Ramazzini, B., 98, 142-4. Rankin, M. T., 226n. Recreational facilities, 133-5. Renold, C. G., 11. Rest pauses, 101-2. Rowan Bonus, 200. Rowan, J., 11. Road transport, 44n, 57, 131-2, 206, 214-5, 224. Roll, E., 1. Rowntree, B. S., 80, 130n, 135, 136, 138, 239, 240, 266. Safety movement, 162-5. Savings schemes, 229-31. Scientific management, 2, 6- 13, 58, 63-5, 198. Seats for workers, 90, 98, 118- 19. Selection of workers, 46-50, 105-6, 148.
--	---

Shop stewards, 187-8.
 Sickness, 72-4, 231-2.
 Silicosis, 145-6.
 Simmett, W. E., 269.
 Singing, 105, 140.
 Small firms, 40-1, 126, 254, 269.
 Smith, Adam, 142.
 Smith, Dempster, 12.
 Smith, May, 72n, 73n.
 Smith, Oberlin, 2.
 Social insurance, 240-53.
 Span of Control, 30-1.
 Staff grading, 269-70.
 State regulation, 40, 42, 112-19, 207-15.
 Stoch, F. G. L., 103n.
 Suggestion schemes, 263.
 Sweating, 208-9.

Taylor, F. W., 2, 3, 6-11, 51, 63-4, 198.
 Technical Schools, 53, 55, 56, 57-8, 66.
 Telephone operators, 47.
 Temperature, 77, 85-7.
 Thomas, J. P., 266n.
 Time and motion studies, 12-16.
 Time-keeping, 77-8, 125.
Times, The, 132, 267n, 268n.
 Tootal, Broadbent, Lee & Co., 54, 240, 259.
 Trade Boards, 207-12.
 Trade Schools, 55-6.

Trade Unions, 62-3.
 amalgamation, 182-3.
 development, 172-9.
 federation, 183-4.
 law, 176, 177, 178.
 structure, 179-81.
 Trainees, 26-7.
 Training for management, 26-8.
 Training of workers, 15, 23, 50-8.
 Tramways, 49, 99, 223.
 Turnover, labour, 22, 78-84, 125.

Unemployment Assistance Board, 251.
 Unemployment benefit schemes, 232-3.
 Unemployment insurance, 248-52.
 Universities, 27, 57, 127.
 Ure, A., 1.
 Urwick, L., 4n, 11n, 18-19, 30, 31.
 U.S.A., 15, 21, 67-8, 81-2, 110, 138, 140-1, 155-6.

Vampa, D., 100.
 Vernon, H. M., 162.
 Ventilation, 85-7.
 Vibration, 87-91.
 Viteles, M. S., 4n, 82.
 Vocational Selection, 10, 21-2, 46-50, 106.

Voluntary welfare, 119-41.
Vrau, P., 123.

Wages, bonus, 196-7.
collective, 195-6.
district, 192-3.
piece, 10, 189, 190, 192,
194-5.
premium, 197-201.
time, 189-91.
Webb, S. and B., 172n.
Welfare, industrial, 111-41.
Wilson, A., 230n.
Whitley Councils, 209, 221-
5, 255.

Women workers, 72, 73, 104,
105, 115, 118, 159, 161,
181.
Work curve, 99-101.
Works Committees, 157, 164,
255-7.
Works magazines, 266-9.
Wundt, W., 19.
Wyatt, S., 103n.

X-ray examinations, 149.

Yates, M. L., 201n.

Zlin, 127.